

Loadcenters and Circuit Breakers

Residential Loadcenters and Breaker Family



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Eaton Type CH Convertible Family



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Overview

Product Selection Guide

CH Loadcenters

Description

Service

Single-phase, three-wire, 120/240 Vac	Three-phase, four-wire, 208Y/120 Vac
Three-phase, three-wire, 240V corner grounded delta	Three-phase, three-wire, 240 Vac delta

Short-Circuit Current Rating

10 kAIC: All single- and three-phase loadcenters 40–400A, 2–42 circuits except when series ratings are applied	35 kAIC available on convertible units using CSH main breaker
25 kAIC: All factory-installed main breakers single-phase loadcenters rated 150–225A using Type CSR main breakers	42 and 100 kAIC are available on some styles: single-phase and three-phase

Main Breaker/Main Lug Loadcenters

Single-phase	Three-phase
Main breaker: 100, 125, 150, 200, 225, 400A	Main breaker: 150, 200, 225, 300, 400A
Main lugs: 40, 70, 125, 150, 200, 225, 400A	Main lugs: 125, 150, 200, 225, 400A

Convertible Loadcenters

Main breaker or main lugs: single-phase up to 225A

Branch Breakers

Type CH: 10–150A. Single-, two- and three-pole. Selected amperages available in shunt trip, HACR and switching duty	Type CH-AFCI arc fault circuit interrupter
Ground fault circuit interruptors: 15–60A	Type CHP: 10–125A. Single-, two- and three-pole. three-position commercial trip
Type CH-HID: 15–30A. Single-, two- and three-pole	Selected amperages available in HACR switching duty
CH-HM high magnetic	Type CHP-HID: 15–30A. Single-, two- and three-pole
CH-M50 high ambient	Type CHP-GFCI: 15–30A. Single-pole ground fault breakers

Enclosures

NEMA® Type 1 indoor	NEMA Type 3R outdoor.
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Loadcenter and Breaker Accessories

Branch circuit breaker:	Complete line of ground bar kits 5, 10, 14 and 21 circuits, some with additional #2/0 lugs
Auxiliary components	Each terminal will accommodate: (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
Hold-down kits	Sub-feed lugs 125, 150A—two- and three-pole
Handle ties	Shunt trips
Lockoffs	Universal rainproof conduit hubs Group One: 3/4, 1, 1-1/4, 1-1/2, 2 inches (19.1, 25.4, 31.8, 38.1, 50.8 mm)
Lockdogs	Group Two: 2, 2-1/2, 3 inches (50.8, 63.5, 76.2 mm)
	Adapter plate

Bussing

Silver flash plated copper bus is a standard feature

Product Description

Loadcenters are enclosures specifically designed to house the branch circuit breakers and wiring required to distribute power to individual circuits. They contain either a main breaker when used at the service entrance point or a main lug when used as a sub-panel to add circuits to existing service. The main breaker protects the main entire panel and can be used as a service disconnect. The branch breakers protect the wires leading to individual electrical loads such as fixtures and outlets.

Features, Benefits and Functions

Loadcenter Construction

Eaton's Type CH loadcenters feature silver flash plated copper bus in all interiors. Stabs are rated 200A throughout the CH line. Therefore, the sum of the handle ratings connected to any one stab is limited to 200A maximum. NEMA 1 boxes are manufactured from cold rolled 16 gauge sheet steel. Raintight boxes are manufactured from galvanized steel. All boxes and trims are finished using an electrostatic powder coat, baked urethane paint process.

Neutrals

Eaton Type CH loadcenters feature two types of neutrals:

Insulated/Bondable Split Neutral

Panels are supplied with split insulated neutrals with an insulated cross strap. For service entrance applications, the neutral must be bonded by using the bonding strap supplied with the panel. For non-service entrance (sub-panel) applications, the panel may be installed with the bonding strap not connected to the neutral. Separate ground bars must be used on non-service entrance panels.

Insulated/Bondable Single Neutral

Panels are supplied with a single insulated neutral. For service entrance applications, all that is required to bond the neutral is to loosen the bonding screw and the neutral screw directly beside it, insert the bonding strap into the neutral bar, and re-tighten both connections. The single neutral can be moved by the contractor to the other side of the panel, if desired. When used as a service entrance panel, unused neutral connections may be used for the termination of equipment grounds. For non-service entrance (sub-panel) applications, the panel may be installed with the bonding strap not connected to the neutral. Separate ground bars must be used on non-service entrance panels.

Inboard Plug-On Neutral

Code changes and higher safety standards are leading to more arc fault circuit interrupter (AFCI) installations. With the electrical contractor in mind, Eaton has revolutionized the way Combination AFCIs are installed with the Plug-on Neutral line of loadcenters and breakers. This unique product solution enables the contractor to connect the breaker directly to the neutral bar, eliminating the need for wiring a pigtail.

Grounds

In service entrance applications where the neutral is bonded, unused neutral holes may be used for terminating ground conductors. In sub-feed panels, the neutral must be isolated (non-bonded), and ground wires must be terminated on a separate ground bar.

The insulated/bondable single/split neutral panels have sufficient terminations for both ground and neutral conductors. The insulated/bondable single split neutral panels are supplied with a separate factory-installed ground bar if the catalog number contains a "G." If not, a separate ground bar should be installed. Insulated/Bondable Single Neutral panels are supplied without a ground bar (unless otherwise noted), and ground bar kits, if needed, must be purchased separately.

Standards and Certifications

UL® Listings

All Eaton Type CH loadcenters are listed under UL File E8741.

Neutral and Ground Terminals

The standard terminals on grounds and neutrals are rated to accept (3)—#14—#10 Cu/Al or (1)—#14—4 wires. For larger cables, add-on neutral lugs may be ordered from the Accessories.

Note: NEC® allows only one current carrying conductor per hole on neutrals unless otherwise noted.

Bottom-Fed Loadcenters

When the power cable is brought into the loadcenter from below the panel; then the main lug panels, and single-phase, 225A and below, loadcenters can be rotated 180 degrees to allow straight-in wiring of power cables to the main terminals. Because the CSR main circuit breaker handle operates horizontally, the orientation of the main circuit breaker handle is consistent with the requirements of NEC Article 240.81.

Gutter Splicing

Loadcenters are not UL listed as wiring troughs. Therefore, gutter splicing of riser cables to tap off to the main device is not permitted. Refer to NEC Article 373.8.

Fire Rating

Due to the numerous openings in both loadcenter boxes and trims, they should not be mounted in firewalls. There is no approval method for sealing the enclosures for this application.

Date Code

The date of manufacture of each loadcenter is printed on the outside of the carton as well as inside the loadcenter. On the carton, the date code is printed on the end carton label. In the loadcenter, the date code is located on the small white label located on the right side wall (with the main device on top).

The date code is in the following format: F # # # &. The "F" is the numeric code for the Lincoln, IL plant, and the three numbers are the year and week of manufacture, e.g., 023. The "&" sign at the end signifies the decade of the 2000s. The "!" at the end signifies the decade of the 2010s. Therefore, the date code F023& would indicate that the product was manufactured in the 23rd week of 2000. The 1980s are represented by a "+" sign and the 1990s are represented by a "=" sign at the end of the code.

Plug-On Type CH Breakers

Quick-make, quick-break switch mechanism combined with inverse time element tripping operation and trip-free handle design. Type CH circuit breakers trip to the OFF position eliminating nuisance callbacks. The thermal-magnetic trip curve avoids nuisance tripping on mild overloads while reacting almost instantaneously to severe short-circuit conditions. CHF breakers include a 'trip flag' to differentiate between a tripped breaker and one that has been turned off. Multipole breakers have internal common trip connection to operate all poles simultaneously. Handles are marked with ON-OFF indication and ampere rating of the breaker. Type CH breakers meet UL Standard 489, NEMA standards, and Federal Spec Classification W-C 375 b/Gen. They are UL listed under File Number E11713, E8741, E3624 and E51287: and CSA® certified file number LR87196, except Type CHT breakers.

Type CH Circuit Breaker Ratings

Single- and double-pole CH breakers rated 15 and 20A have low instantaneous magnetic trip levels. The 15 and 20A breakers with "HM" suffix have high magnetic trip settings recommended for circuits with inherently high inrush currents. All Type CH breakers are marked for heating, air conditioning and refrigeration (HACR) equipment application. Single-pole 15–20A breakers are also suitable for switching duty (SWD). Shunt trip coils operate on 120 Vac and require one additional pole space per breaker.



Type CH Loadcenter

Extra 1.5-Inch (38.1 mm) Knockout
 ■ Larger knockout provides easier installation and time savings for renovation installations

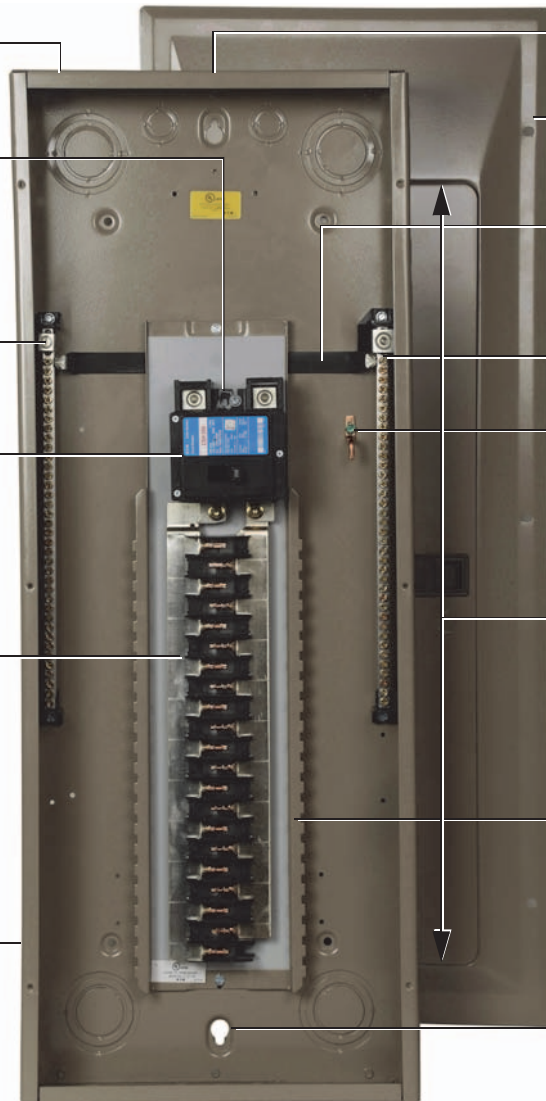
Top or Bottom Feed
 ■ Straight in wiring saves labor and material
 ■ One panel for either top or bottom applications

2/0 Lug
 ■ Allow easy removal and can be installed in any location on the neutral bar

Commercial Grade Main Breaker
 ■ 25 kAIC series rated main breaker in 150A–225A loadcenters. 35, 42 and 100 kAIC series ratings are available
 ■ Optional convertible design—reduces inventory requirements

One-Piece Silver-Flash-Plated Copper Bus
 ■ Provides superior conductivity, corrosion resistance, and durability

Drywall Marking on Enclosure
 ■ Indicates proper mounting depth for flush applications



“Tangential” Center Knockout
 ■ Easier installation for conduit applications

Unique Sandalwood Finish
 ■ Aesthetically appealing, scratch-resistant powder coating

Neutral Bus (Strap)
 ■ Easily removable for sub-panel applications

Split Neutral Bars
 ■ A minimum of 150% neutral capacity

Bonding Z-strap
 ■ Provides easy field conversion for service entrance applications

Separately Packaged Covers
 ■ Full line of “true” surface and combination covers
 ■ Built-in flush leveling feature
 ■ Choice of circuit identification by breaker labels or circuit directory

Steel Backpan
 ■ Provides solid and reliable breaker mounting—single piece design for stability and durability

Single Keyhole Mounting
 ■ One keyhole at the top and bottom provides easier mounting and leveling

Warranty

The minimum warranty for residential loadcenters, breakers and surge protection devices shall be as follows:

- Lifetime loadcenter warranty
- Lifetime warranty on CH circuit breakers
- Lifetime warranty on CHSPT2ULTRA including \$75,000 connected equipment warranty
- 1-year warranty on plug-in surge protective device (CHSA)

1.1

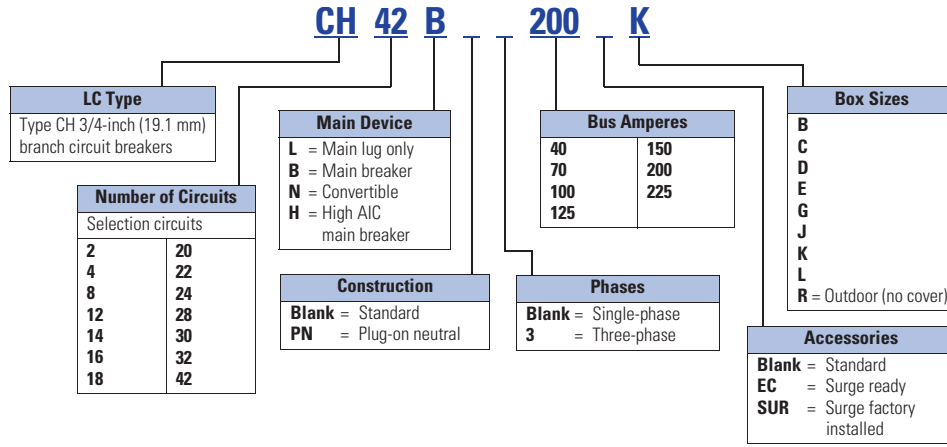
Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

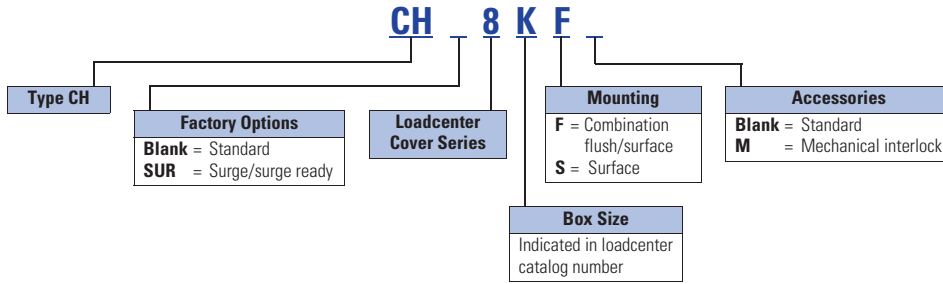
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Catalog Number Selection

Loadcenters 100–225A and 12–42 Circuits



Indoor Covers Ordered Separately



Note: All combinations are not valid, refer to the catalog section.

Product Selection

Single-Phase—Main Circuit Breaker Loadcenters—10/25 kAIC

CH42B200K



Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ^{①②} Catalog Number	Loadcenter Cover Catalog Number Combination ^③	Surface			
CH 10 kAIC	100	14	Indoor	B	#6-1/0	CH14B100B ^④	CH8BF	CH8BS			
		14	Outdoor	B	#6-1/0	CH14B100R ^⑤	—	—			
		18	Indoor	C	#6-1/0	CH18B100C ^④	CH8CF	CH8CS			
		18	Outdoor	C	#6-1/0	CH18B100R ^⑤	—	—			
		22	Indoor	C	#6-1/0	CH22B100C ^④	CH8CF	CH8CS			
		22	Outdoor	C	#6-1/0	CH22B100R ^⑤	—	—			
	125	125	22	Indoor	C	#6-1/0	CH22B125C ^④	CH8CF	CH8CS		
			22	Outdoor	C	#6-1/0	CH22B125R ^⑤	—	—		
			30	Indoor	D	#6-1/0	CH30B125D ^④	CH8DF	CH8DS		
			30	Outdoor	D	#6-1/0	CH30B125R ^⑤	—	—		
			CSR 25 kAIC	150	8	Outdoor	E	#2-300 kcmil	CH8B150RF ^⑥	—	—
					24	Indoor	E	#2-300 kcmil	CH24B150E ^④	CH8EF	CH8ES
24	Outdoor	E			#2-300 kcmil	CH24B150R ^⑤	—	—			
32	Indoor	J			#2-300 kcmil	CH32B150J ^④	CH8JF	CH8JS			
32	Outdoor	J			#2-300 kcmil	CH32B150R ^⑤	—	—			
200	200	8			Outdoor	E	#2-300 kcmil	CH8B200RF ^⑥	—	—	
		24	Indoor	E	#2-300 kcmil	CH24B200E ^④	CH8EF	CH8ES			
		24	Outdoor	E	#2-300 kcmil	CH24B200R ^⑤	—	—			
		32	Indoor	J	#2-300 kcmil	CH32B200J ^④	CH8JF	CH8JS			
		32	Outdoor	J	#2-300 kcmil	CH32B200R ^⑤	—	—			
		42	Indoor	K	#2-300 kcmil	CH42B200K ^④	CH8KF	CH8KS			
		42	Outdoor	K	#2-300 kcmil	CH42B200R ^⑤	—	—			
		225	225	32	Indoor	J	#2-300 kcmil	CH32B225J ^④	CH8JF	CH8JS	
				32	Outdoor	J	#2-300 kcmil	CH32B225R ^⑤	—	—	
				42	Indoor	K	#2-300 kcmil	CH42B225K ^④	CH8KF	CH8KS	
				42	Outdoor	K	#2-300 kcmil	CH42B225R ^⑤	—	—	
		DK 10 kAIC	300	42	Indoor	PM	(2) 3/0-250 kcmil	CH42PM300	CH7PMF ^⑦	CH7PMS	
400	Indoor			PM	(2) 3/0-250 kcmil	CH42PM400	CH7PMF ^⑦	CH7PMS			

Notes

- ① All main circuit breaker loadcenters are listed for use as service entrance equipment.
- ② Ground bar kits priced separately. See **Page V1-T1-25**.
- ③ Combination style covers may be used in surface or flush applications.
- ④ Can be top or bottom fed by rotating the enclosure and trim 180 degrees.
- ⑤ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-25**.
- ⑥ Panel includes #4-300 kcmil feed-through lugs.
- ⑦ This cover is for flush applications only (not combination).

Box sizes **Pages V1-T1-27** and **V1-T1-28**.

Single-Phase—High Interrupting Rated Main Circuit Breaker Loadcenters—100 kAIC**Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral**






Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ^① Catalog Number	Loadcenter Cover Catalog Number Combination ^②	Surface
CHB4 100 kAIC ^⑤	100	32	Indoor	L	#6–1/0	CH32H100L ^③	CH8LF	CH8LS
		32	Outdoor	L	#6–1/0	CH32H100R ^④	—	—
CHH 100 kAIC ^⑤	150	32	Indoor	L	#2/0–300 kcmil	CH32H150L	CH8LF	CH8LS
		32	Outdoor	L	#2/0–300 kcmil	CH32H150R ^④	—	—
	200	32	Indoor	L	#2/0–300 kcmil	CH32H200L	CH8LF	CH8LS
		32	Outdoor	L	#2/0–300 kcmil	CH32H200R ^④	—	—
		42	Indoor	L	#2/0–300 kcmil	CH42H200L	CH8LF	CH8LS
		42	Outdoor	L	#2/0–300 kcmil	CH42H200R ^④	—	—
	225	42	Indoor	L	#2/0–300 kcmil	CH42H225L	CH8LF	CH8LS
		42	Outdoor	L	#2/0–300 kcmil	CH42H225R ^④	—	—

Notes

- ① All main circuit breaker loadcenters are listed for use as service entrance equipment.
- ② Combination style covers may be used in surface or flush applications.
- ③ Loadcenter can be top or bottom fed by rotating the enclosure and trim 180 degrees.
- ④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-25**.
- ⑤ Series rated for 100 kAIC with all Types CH, CHT and CHP breakers.

Single-Phase—Main Lug Loadcenters

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Single Neutral

Surface	Outdoor	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Space		Enclosure Type	Type of Trim (Included)	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
				Poles					
		40	2	4 ①	Indoor	Surface (no door)	5	#14–6	CH2L40SP ②③
			2	4 ①	Outdoor	—	5R	#14–6	CH2L40RP ②③④
			2	4 ①	Indoor	Flush (no door)	5	#14–6	CH2L40FP ②③
		70	2	4 ①	Indoor	Surface (no door)	5	#14–2	CH2L70SP ②③
			2	4 ①	Outdoor	—	5R	#14–2	CH2L70RP ②③④
			2	4 ①	Indoor	Flush (no door)	5	#14–2	CH2L70FP ②③
		125	2	4 ①	Indoor	Surface (no door)	6	#14–1/0	CH2L125SP ②③
			2	4 ①	Outdoor	—	6R	#14–1/0	CH2L125RP ②③④
			2	2	Outdoor	—	—	#14–1/0	CH2L125RSE2P ④⑤⑥
			2	4 ①	Indoor	Flush (no door)	6	#14–1/0	CH2L125FP ②③
			4	8 ①	Indoor	Surface (no door)	7	#14–1/0	CH4L125SP ②⑦
			4	8 ①	Outdoor	—	7R	#14–1/0	CH4L125RP ②④⑦
		125	4	8 ①	Indoor	Flush (no door)	7	#14–1/0	CH4L125FP ②⑦
			6	12 ①	Outdoor	—	6R	#14–1/0	CH6L125R ②⑥⑦
			8	16 ①	Indoor	Surface (no door)	7	#6–1/0	CH8L125SP ②⑧
			8	16 ①	Outdoor	—	7R	#6–1/0	CH8L125RP ②⑥⑦
			8	16 ①	Indoor	Flush (no door)	7	#6–1/0	CH8L125FP ②⑧
					125	8	16 ①	Indoor	Surface (no door)
8	16 ①	Outdoor				—	7R	#6–1/0	CH8L125RP ②⑥⑦
8	16 ①	Indoor				Flush (no door)	7	#6–1/0	CH8L125FP ②⑧

Notes

- ① Requires the use of Type CHNT breakers.
- ② Ground bar kits priced separately, see **Page V1-T1-25**
 - For 2/4 and 6/12 circuit loadcenters use Type GBK5 or GBK520 ground bar
 - For 4/8 and 8/16 circuit loadcenters use Type GBK10 ground bar
 - Ground bars mount to the left side wall of the enclosure for the 4/8, 6/12 and 8/16 circuit loadcenters
- ③ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-25**.
- ⑤ For use as service entrance applications only.
- ⑥ Neutral/ground holes (6) #14–6 and (3) #14–2/0 AWG Cu/Al.
- ⑦ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ⑧ Suitable for use as service equipment when a main breaker is used or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

Box sizes **Pages V1-T1-27** and **V1-T1-28**.

CH42L225G



Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral—Factory-Installed Ground Bar

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	Combination	Surface
125	12	Indoor	B	#6–2/0	CH12L125B ①	CH8BF	CH8BS	
	12	Outdoor	B	#6–2/0	CH12L125R ①②	—	—	
	16	Indoor	B	#6–2/0	CH16L125B ①	CH8BF	CH8BS	
	16	Outdoor	B	#6–2/0	CH16L125R ①②	—	—	
	20	Indoor	C	#6–2/0	CH20L125C ①	CH8CF	CH8CS	
	20	Outdoor	C	#6–2/0	CH20L125R ①②	—	—	
	24	Indoor	C	#6–2/0	CH24L125C ①	CH8CF	CH8CS	
	24	Outdoor	C	#6–2/0	CH24L125R ①②	—	—	
150	24	Indoor	D	#4–300 kcmil	CH24L150D ①	CH8DF	CH8DS	
	24	Outdoor	D	#4–300 kcmil	CH24L150R ②③	—	—	
	32	Indoor	D	#4–300 kcmil	CH32L150D ①	CH8DF	CH8DS	
	32	Outdoor	D	#4–300 kcmil	CH32L150R ②③	—	—	
200	12	Indoor	D	#4–300 kcmil	CH12L200D ①	CH8DF	CH8DS	
	12	Outdoor	D	#4–300 kcmil	CH12L200R ②③	—	—	
	16	Indoor	D	#4–300 kcmil	CH16L200D ①	CH8DF	CH8DS	
	16	Outdoor	D	#4–300 kcmil	CH16L200R ②③	—	—	
225	24	Indoor	D	#4–300 kcmil	CH24L225D ①	CH8DF	CH8DS	
	24	Outdoor	D	#4–300 kcmil	CH24L225R ②③	—	—	
	32	Indoor	D	#4–300 kcmil	CH32L225D ①	CH8DF	CH8DS	
	32	Outdoor	D	#4–300 kcmil	CH32L225R ②③	—	—	
	42	Indoor	G	#4–300 kcmil	CH42L225G ③	CH8GF	CH8GS	
	42	Outdoor	G	#4–300 kcmil	CH42L225R ②③	—	—	
400	42	Indoor	P	(2) 1/0–300 kcmil (1) 750 kcmil	CH42PL400 ④	CH7PF ⑤	CH7PS	

Notes

- ① Suitable for use as service equipment when not more than six disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ② Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-25**.
- ③ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down bracket kit catalog number **CH125RB**.
- ④ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and must be a Type CHB.
The breaker cannot be a Type CH.
- ⑤ This cover is for flush application only (not combination).

Box sizes **Pages V1-T1-27** and **V1-T1-28**.

Convertible Loadcenters MCB or MLO—Base Units and Main Devices—10/25/35 kAIC

Complete assembly consists of: loadcenter, cover, and either main breaker kit or main lug kit.

Indoor—Single-Phase—Three-Wire—120/240V—Insulated/Bondable Split Neutral—Top or Bottom Feed

Maximum Main Ampere Rating	Maximum Number of Single Poles	Box Size	Loadcenter Box and Panel Catalog Number ①	Loadcenter Cover Catalog Number		Main Lug Kit		Main Breaker Kit		Catalog Number	
				Combination	Surface	Wire Size	Catalog Number	kAIC Rating	Wire Size		
125	22	C	CH22N125C	CH8CF	CH8CS	#10–1/0	CHL125N	10	#10–1/0	CH2100N ③	—
										CH2125N ③	—
200	32	J	CH32N200J	CH8JF	CH8JS	#4–300 kcmil	CHL225N	25/35 ②	#2–300 kcmil	CSR2125N	CSH2125N ④
										CSR2150N	CSH2150N ④
										CSR2175N	CSH2175N ④
										CSR2200N	CSH2200N ④
225	42	K	CH42N225K	CH8KF	CH8KS	#4–300 kcmil	CHL225N	25/35 ②	#2–300 kcmil	CSR2125N	CSH2125N ④
										CSR2150N	CSH2150N ④
										CSR2175N	CSH2175N ④
										CSR2200N	CSH2200N ④
										CSR2225N	CSH2225N ④

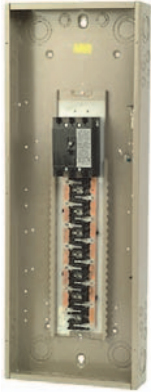
Outdoor—Single-Phase—Three-Wire—120/240V—Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Maximum Main Ampere Rating	Maximum Number of Single Poles	Box Size	Loadcenter Box and Panel Catalog Number ①	Main Lug Kit		Main Breaker Kit		Catalog Number	
				Wire Size	Catalog Number	kAIC Rating	Wire Size		
125	22	C	CH22N125R ⑤	#10–1/0	CHL125N	10	#10–1/0	CH2100N ③	—
								CH2125N ③	—
200	8	E	CH8N200RF ⑥⑦	#4–300 kcmil	CHL225N	25/35 ②	#2–300 kcmil	CSR2125N	CSH2125N
								CSR2150N	CSH2150N
								CSR2175N	CSH2175N
								CSR2200N	CSH2200N
200	32	J	CH32N200R ⑤	#4–300 kcmil	CHL225N	25/35 ②	#2–300 kcmil	CSR2125N	CSH2125N ④
								CSR2150N	CSH2150N ④
								CSR2175N	CSH2175N ④
								CSR2200N	CSH2200N ④
225	42	K	CH42N225R ⑤	#4–300 kcmil	CHL225N	25/35 ②	#2–300 kcmil	CSR2125N	CSH2125N ④
								CSR2150N	CSH2150N ④
								CSR2175N	CSH2175N ④
								CSR2200N	CSH2200N ④
								CSR2225N	CSH2225N ④

Notes

- ① Panel does not include main. Order main breaker or main lug kit separately.
- ② If 35 kAIC is required, use CSH breaker.
- ③ Hold-down kit included.
- ④ 35 kAIC series combination rating is obtained when Types CH, CHT and CHP branch breakers are used with CSH main.
- ⑤ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-25**.
- ⑥ Includes feed-through lugs for both phase and neutral conductors.
- ⑦ Insulated/bondable single neutral.

Interrupting rating depends on main circuit breaker selected.

Three-Phase—Main Circuit Breaker Loadcenters—10 kAIC**CH42B3200L****Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral**

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter ^{①②} Catalog Number	Loadcenter Cover Catalog Number	
							Combination	Surface
CC 10 kAIC	150	30	Indoor	L	#1–4/0	CH30B3150L	CH8LF	CH8LS
			Outdoor	L	#1–4/0	CH30B3150R ^③	—	—
	200	30	Indoor	L	#2/0–300 kcmil	CH30B3200L	CH8LF	CH8LS
			Outdoor	L	#2/0–300 kcmil	CH30B3200R ^③	—	—
		42	Indoor	L	#2/0–300 kcmil	CH42B3200L	CH8LF	CH8LS
			Outdoor	L	#2/0–300 kcmil	CH42B3200R ^③	—	—
	225	30	Indoor	L	#2/0–300 kcmil	CH30B3225L	CH8LF	CH8LS
			Outdoor	L	#2/0–300 kcmil	CH30B3225R ^③	—	—
		42	Indoor	L	#2/0–300 kcmil	CH42B3225L	CH8LF	CH8LS
			Outdoor	L	#2/0–300 kcmil	CH42B3225R ^③	—	—
	400	42	Indoor	PM	(2) 3/0–350 kcmil	CH424PM400	CH7PMF ^④	CH7PMS

Three-Phase—High Interrupting Rated Main Circuit Breaker Loadcenters—100 kAIC**Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral**

Main Breaker Type	Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm) of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number ^{①②}	Loadcenter Cover Catalog Number	
							Combination	Surface
CHH 100 kAIC ^⑤	200	30	Indoor	L	#2/0–300 kcmil	CH30H3200L	CH8LF	CH8LS
			Outdoor	L	#2/0–300 kcmil	CH30H3200R ^③	—	—
		42	Indoor	L	#2/0–300 kcmil	CH42H3200L	CH8LF	CH8LS
			Outdoor	L	#2/0–300 kcmil	CH42H3200R ^③	—	—
	225	42	Indoor	L	#2/0–300 kcmil	CH42H3225L	CH8LF	CH8LS
			Outdoor	L	#2/0–300 kcmil	CH42H3225R ^③	—	—

Notes

- ① All main circuit breaker loadcenters are listed for use as service entrance equipment.
 ② Ground bar kits priced separately. For ground bar kits, see **Page V1-T1-25**.
 ③ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-25**.
 ④ This cover for flush application only (not combination).
 ⑤ 100 kAIC series combination rating is obtained when Types CH and CHP branch breakers are used with CHH main.

Three-Phase—Main Lug Loadcenters

Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Main Ampere Rating	Maximum Number 3/4-Inch (19.1 mm)		Enclosure Type	Type of Trim Included	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	
	Spaces	Poles						Combination	Single
125	6	12 ①	Indoor	Surface, no door	7	#14–1/0	CH6L3125SP ②③④	—	—
	6	12 ①	Outdoor	—	7R	#14–1/0	CH6L3125RP ②③④⑤	—	—
	6	12 ①	Indoor	Flush, no door	7	#14–1/0	CH6L3125FP ②③④	—	—
	12	12	Indoor	—	B	#6–2/0	CH12L3125B ⑥⑦	CH8BF	CH8BS
	12	12	Outdoor	—	B	#6–2/0	CH12L3125R ⑥⑦	—	—
	18	18	Indoor	—	C	#6–2/0	CH18L3125C ⑥⑦	CH8CF	CH8CS
	18	18	Outdoor	—	C	#6–2/0	CH18L3125R ⑥⑦⑧	—	—
	24	24	Indoor	—	C	#6–2/0	CH24L3125C ⑥⑦	CH8CF	CH8CS
24	24	Outdoor	—	C	#6–2/0	CH24L3125R ⑥⑦⑧	—	—	
150	30	30	Indoor	—	D	#4–300 kcmil	CH30L3150D ⑥⑦	CH8DF	CH8DS
	30	30	Outdoor	—	D	#4–300 kcmil	CH30L3150R ⑥⑦⑨	—	—
225	24	24	Indoor	—	D	#4–300 kcmil	CH24L3225D ⑥⑦	CH8DF	CH8DS
	24	24	Outdoor	—	D	#4–300 kcmil	CH24L3225R ⑥⑦⑨	—	—
	30	30	Indoor	—	D	#4–300 kcmil	CH30L3225D ⑥⑦	CH8DF	CH8DS
	30	30	Outdoor	—	D	#4–300 kcmil	CH30L3225R ⑥⑦⑨	—	—
	42	42	Indoor	—	G	#4–300 kcmil	CH42L3225G ⑥⑧	CH8GF	CH8GS
	42	42	Outdoor	—	G	#4–300 kcmil	CH42L3225R ⑥⑧⑨	—	—
400	42	42	Indoor	—	P	(2) 1/0–300 kcmil (1) 750 kcmil	CH424PL400 ⑩⑪	CH7PF ⑫	CH7PS

Notes

- ① Requires the use of CHNT breakers.
- ② Suitable for use as service equipment when not more than two service disconnecting means are provided or when not more than six service disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ③ Ground bar kits priced separately, see **Page V1-T1-25**.
 - Use GBK10 ground bar
 - Ground bars mount to the left side wall of the enclosure.
- ④ Insulated/bondable single neutral.
- ⑤ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-25**.
- ⑥ Ground bar Type GBK14 is installed.
- ⑦ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down bracket kit catalog number Type **CH125RB**. Suitable for use as service equipment when not more than six service disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ⑧ Ground bar Type GBK21 is installed.
- ⑨ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and requires hold-down kit catalog number Type **CH125RB**.
- ⑩ For ground bar kits, see **Page V1-T1-25**.
- ⑪ Suitable for use as service equipment when a circuit breaker is used as a main breaker. The main breaker is backfed and must be a Type CHB. **The breaker cannot be a Type CH.**
- ⑫ This cover for flush application only (not combination).

Box sizes **Pages V1-T1-27** and **V1-T1-28**.

Spa Panels



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CH Specialty Products

Spa Panels

Product Description:

Eaton’s CH Spa Panels are premium factory-assembled “combination” units that provide ground fault protection, as well as a convenient way to turn spa pumps on and off. The NEC requires that all pool and spa pumps be protected by a ground fault interrupter and a disconnect switch mounted within 10 feet of the tub or the spa.

Features

- Two extra circuits for additional loads
- Limited lifetime warranty
- UL Listed
- Tough powder-coated galvanized steel enclosure
- Factory-installed two-pole ground fault circuit interrupter (GFCI)



Quick-ProSM

All you need to know to save time and make more money. Specified on certain Eaton products, the Quick-Pro symbol allows for immediate recognition of products that are designed for straightforward installation. When you see Quick-Pro, you know you can install quickly—sometimes up to 50% less than the usual installation time—and move on to your next job.

Product Selection

CH Spa Panel



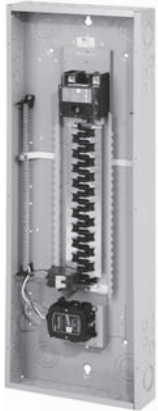
Single-Phase Three-Wire—120/240 Vac Insulated/Bondable Neutral—Factory-Installed Ground Bar

Main Ampere Rating	Circuit Breaker Included	Enclosure Type	Type of Trim Included	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
30	CH230GF	Outdoor	—	5R	#14–1/0	CH30SPA ①
40	CH240GF	Outdoor	—	5R	#14–1/0	CH40SPA ②
50	CH250GF	Outdoor	—	5R	#14–1/0	CH50SPA ③
60	CH260GF	Outdoor	—	5R	#14–1/0	CH60SPA ④

Notes

- ① Includes a CH230GFI breaker, factory installed, and two extra circuits for convenience.
- ② Includes a CH240GFI breaker, factory installed, and two extra circuits for convenience.
- ③ Includes a CH250GFI breaker, factory installed, and two extra circuits for convenience.
- ④ Includes a CH260GFI breaker, factory installed, and two extra circuits for convenience.

Surge Panel



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Surge Panel

Product Description

Eaton's Type CH Surge Loadcenter includes a factory-mounted and wired surge suppressor device. There is a knockout in the cover that allows the user to view the status indication lights on the surge suppressor. The CH Surge Loadcenter reduces the surge current, helping protect sensitive home electronic equipment.



Save labor by installing a factory-mounted surge protective device.

Factory-Installed Surge Protection

- Includes a CHSPT2ULTRA and a two-pole 50A circuit breaker
- Increases the effectiveness of surge protection due to reduced lead length
- A modified deadfront allows for easy viewing of indicating lights

Surge Ready

- Provides a mounting provision for CHSPT2ULTRA
- A modified deadfront allows for easy viewing of indicating lights

Product Selection

Surge Installed Loadcenters

Ampere Rating	Type	Number of Circuits	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	Surface
225	Convertible	42	CHSUR42N225L ①	CHSUR8LF	CHSUR8LS
225	Convertible ②	42	CHSUR42L225L2 ①	CHSUR8LF	CHSUR8LS
200	Main breaker	42	CHSUR42B200L2 ①	CHSUR8LF	CHSUR8LS
225	Convertible	32	CHSUR32N225K ①	CHSUR8KF	CHSUR8KS
225	Convertible ②	32	CHSUR32L225K ①	CHSUR8KF	CHSUR8KS
200	Main breaker	32	CHSUR32B200K ①	CHSUR8KF	CHSUR8KS
150	Main breaker	32	CHSUR32B150K ①	CHSUR8KF	CHSUR8KS
100	Main breaker	32	CHSUR32B100K ①	CHSUR8KF	CHSUR8KS
125	Convertible ②	24	CHSUR24L125E ①	CHSUR8EF	CHSUR8ES
100	Main breaker	24	CHSUR24B100E ①	CHSUR8EF	CHSUR8ES
200	Convertible	40/40	BRSUR4040N200	Cover included	
200	Main lug	40/40	BRSUR4040L200	Cover included	
200	Main breaker	40/40	BRSUR4040B200	Cover included	
200	Convertible	30/40	BRSUR3040N200	Cover included	
200	Main lug	30/40	BRSUR3040L200	Cover included	
200	Main breaker	30/40	BRSUR3040B200	Cover included	

Notes

- ① Order cover separately.
- ② With main lugs installed.

Surge Ready Loadcenters (provision only, CHSPT2ULTRA and breaker not included)

Ampere Rating	Type	Number of Circuits	Loadcenter Catalog Number ①	Loadcenter Cover Catalog Number	
				Combination	Surface
225	Convertible	42	CHEC42N225L	CHSUR8LF	CHSUR8LS
225	Convertible ②	42	CHEC42L225L	CHSUR8LF	CHSUR8LS
200	Main breaker	42	CHEC42B200L	CHSUR8LF	CHSUR8LS
225	Convertible ②	32	CHEC32L225K	CHSUR8KF	CHSUR8LS
225	Convertible	32	CHEC32N225K	CHSUR8KF	CHSUR8LS
200	Main breaker	32	CHEC32B200K	CHSUR8KF	CHSUR8LS
150	Main breaker	32	CHEC32B150K	CHSUR8KF	CHSUR8LS
100	Main breaker	32	CHEC32B100K	CHSUR8KF	CHSUR8LS
125	Convertible ②	24	CHEC24L125E	CHSUR8EF	CHSUR8LS
100	Main breaker	24	CHEC24B100E	CHSUR8EF	CHSUR8LS

Main Breaker Kits

Maximum Main Ampere Rating	Catalog Number	
	25 kAIC	35 kAIC
100	CSR2100N	CSH2100N
150	CSR2150N	CSH2150N
200	CSR2200N	CSH2200N
225	CSR2225N	CSH2225N

Main Lug Kits

Maximum Main Ampere Rating	Catalog Number
125	CHL125N
225	CHL225N

Technical Data and Specifications**Ratings**

- Loadcenter
 - 25 kAIC main breaker, main lug only, and convertible main breaker/main lug
 - Factory installed or provision for field-installed surge suppressor
 - Top or bottom feed
- Surge protective device (CHSPT2ULTRA)
 - Nominal discharge current: 20 kA (I_n)
 - Surge current capacity per phase: 108 kA
 - Warranty: \$75,000 connected equipment ③
 - For further product ratings, see Volume 1, Tab 2.1 Surge Protection

Notes

- ① Order cover separately.
 ② With main lugs installed.
 ③ For warranty details, visit www.eaton.com/surgetrap

60-Circuit Plug-On Neutral Loadcenter



Plug-On Neutral Loadcenter

Product Description

Code changes and higher safety standards are leading to more arc fault and ground fault circuit interrupter installations. Eaton offers a unique product solution that enables a direct connection of the breaker to the neutral bar, eliminating the need for wiring a pigtail.

Features and Benefits

- Time savings up to 25% per AFCI/GFCI installation
- Eliminates nuisance tripping due to loose pigtail connections
- Clean gutter space
- Easier troubleshooting due to less wiring
- Backed by a limited lifetime warranty

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Product Selection

Main Breaker Plug-On Neutral Loadcenters

Main Breaker Type	Main Ampere Rating	Max. Number 3/4-Inch Circuits	Max. Number of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al	Catalog Number	Cover Catalog Number	
								Combination	Surface
CSR 25 kAIC	100	24	24	Indoor	E	#2–300 kcmil	CH24BPN100E	CH8EF	CH8ES
	200	32	32	Indoor	J	#2–300 kcmil	CH32BPN200J	CH8JF	CH8JS
	200	42	42	Indoor	K	#2–300 kcmil	CH42BPN200K	CH8KF	CH8KS
	200	60	120 ^①	Indoor	N	#2–300 kcmil	CH60BPN200N	CH8NF	—

Main Lug Only/Convertible Plug-On Neutral Loadcenters—With Factory Installed Main Lugs

Max. Ampere Rating	Max. Number 3/4-Inch Poles	Enclosure Type	Box Size	Catalog Number	Wire Size Range for Main Lug	Main Breaker Kit ^②	Wire Size Range For Main Breaker	Cover Catalog Number	
								Combination	Surface
125	24	Indoor	E	CH24NLPN125E	#6–300 kcmil	CSR2100N	#2–300 kcmil	CH8NLEF	CH8NLES
						CSR2125N			
225	32	Indoor	J	CH32NLPN225J	#6–300 kcmil	CSR2125N	#2–300 kcmil	CH8NLJF	CH8NLJS
						CSR2200N			
						CSR2100N			
225	42	Indoor	K	CH42NLPN225K	#6–300 kcmil	CSR2125N	#2–300 kcmil	CH8NLKF	CH8NLKS
						CSR2150N			
						CSR2200N			

Notes

- ① Requires the use of type CHNT breakers.
- ② If 35 kAIC is required, use CSH breaker equivalent.

Renovation Panel



Type CH Renovation Loadcenter

Product Description

Eaton’s Renovation Loadcenter is designed for the service contractor. With the addition of a five-circuit terminal block factory mounted in the top left corner of the loadcenter, the service contractor can terminate short-circuit wires instead of having to use expensive wire nuts. Also, the Renovation Loadcenter incorporates a twin-stacked neutral design that places the neutral and ground terminations higher in the loadcenter. Both of these features were added without increasing any size from a standard loadcenter. These features will eliminate the need for wire nuts and make for a much neater installation. There is a provision to field mount a second five-circuit terminal block (RN5TB) in the top right corner of the loadcenter. Choose amongst Eaton’s Type CH breaker family for use in the Renovation Panel.

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Product Selection

Single-Phase—Main Circuit Breaker Loadcenters 25 kAIC^①

Single-Phase, Three-Wire—120/240 Vac—Stacked Split Neutral

Main Breaker Type	Main Ampere Rating	Max. Number 3/4-Inch (19.1 mm) of Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60 or 70°C for Main Breakers	Loadcenter Catalog Number	Cover Catalog Number ^②	
							Combination	Surface
CH	100	20	Indoor	C	#6–1/0	CH22B100CRN	CH8CFF	CH8CS
CSR	150	32	Indoor	J	#2–300 kcmil	CH32B150JRN	CH8JF	CH8JS
CSR	200	32	Indoor	J	#2–300 kcmil	CH32B200JRN	CH8J	CH8JS
CSR	200	42	Indoor	K	#2–300 kcmil	CH42B200KRN	CH8KF	CH8KS

Branch Circuit Breakers (CH)

See **Pages V1-T1-2–V1-T1-13.**

Renovation Loadcenter

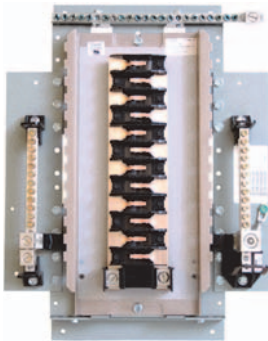
Description	Catalog Number
Five-circuit terminal block kit	RN5TB
Ground bar kits (two maximum per panel)	(See Page V1-T1-25)

Notes

- ① 100A main breaker is rated 10 kAIC.
- ② Combination style covers may be used in surface or flush applications.

All main circuit breaker loadcenters are listed for use as service entrance equipment. Loadcenters are factory-bonded for service entrance applications. Remove bonding strap for separate neutral and ground bars for sub-feed applications.

Type CH Retrofit Interior



Type CH Retrofit Adjustable Interior



Type CH Retrofit Interior Collar and Assembly with Trim

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Type CH Retrofit Interior Kits

Product Description

Replacing existing loadcenters and panelboards can be a time consuming and expensive job. CH retrofit kits can be the solution to save time and money. The kit consists of a standard trim to fit the interior, a picture frame trim to fit the existing box, and a field-adjustable interior assembly that includes neutral and ground bars. These are especially applicable when the existing box is flush mounted in drywall, plaster or block wall. The existing box, and many times existing wiring, can remain.

Features and Benefits

Upgrading Existing Electrical Infrastructure Is Simple

- Replaces vintage brands that have hard to find, expensive replacement breakers
- Allows safety upgrade to arc fault and ground fault breakers
- Maximizes number of circuits available with compact design
- Meets 2008 NEC wire bending requirements
- Eco-friendly in asbestos-filled environments
- Exclusive design

Save Time and Money Throughout the Installation

- Uses existing panel box and wires
- Eliminates expensive drywall/paint repair
- Saves 2–3 hours compared to a complete panel changeout—get off the job faster
- Eliminates precise measurements with field-adjustable kit

Standards and Certifications

Interiors are UL recognized under UL 67, Panelboard standard.



Detailed Product Guide

All standard retrofit kits are suitable for a range of existing box sizes:

- Box width ranging from 14.50 to 22.00 inches (368.3 to 558.8 mm)
- Box depth ranging from 4.25 inches (108.0 mm) for CH to 6.00 inches (152.4 mm)
- Box height ranging from 21.00 to 45.00 inches (533.4 to 1143.0 mm)

For box dimensions outside of these ranges, contact the Lincoln Flex Center at 800-330-6479. Be sure to provide the existing incoming line wire size.

1.1

Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

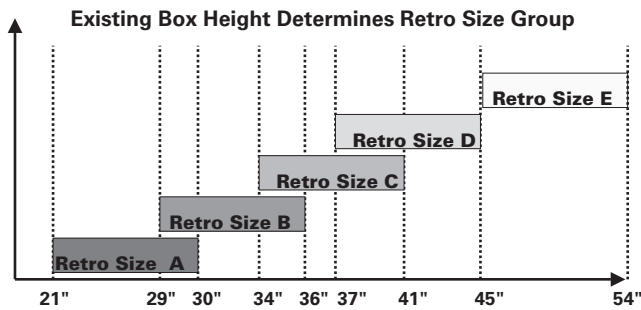
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CH Specialty Product Selection

To select the retrofit kit:

- From the existing box size determine which retrofit groups are suitable (may be more than one).
- Use type of interior, number of phases, and type of main to find the selection chart.
- Select part number from chart (if main breaker, replace XXX with specific amp rating).
- Note that the overlap of the existing wall is the retro cover size minus the existing box size. If specific measurements are needed, communicate that you need a custom trim size.
- Contact the Lincoln Flex Center at 800-330-6479 for pricing, lead-times, and order entry instructions.

Retro Size Groups



Retrofit Stocking Kits (BR and CH Kits Available)

Five recommended groups: existing box height determines retro group size. Approximate Dimensions in Inches (mm).

Catalog Number ^①	Cover ^②	Existing Enclosure Parameters—Inches (mm)				Minimum Height	Maximum Height	Phase	Main	Bus	Amperes ^③	Circuits	UL67 Listed
		Minimum Depth	Maximum Depth	Minimum Width	Maximum Width								
CH Retrofit Interiors and Covers													
RWCH6L125N	CRWCH6ML****	3.13 (79.5)	4.13 (104.9)	7.00 (177.8)	9.00 (228.6)	8.50 (215.9)	12.00 (304.8)	Single	MLO	CH	125	6	No
RSCH10B125N	CRWCH12ML****	3.50 (88.9)	4.50 (114.3)	8.50 (215.9)	12.00 (304.8)	16.50 (419.1)	20.00 (508.0)	Single	MCB	CH	125	10	No
RSCH12L125N	CRWCH12ML****	3.50 (88.9)	4.50 (114.3)	8.50 (215.9)	12.00 (304.8)	16.50 (419.1)	20.00 (508.0)	Single	MLO	CH	125	12	No
RACH22B125J	CRACH24ML****	3.75 (95.3)	4.25 (108.0)	13.00 (330.2)	22.00 (558.8)	21.00 (533.4)	30.00 (762.0)	Single	MCB	CH	125	22	No
RACH24L125J	CRACH24ML****	3.75 (95.3)	4.25 (108.0)	13.00 (330.2)	22.00 (558.8)	21.00 (533.4)	30.00 (762.0)	Single	MLO	CH	125	24	No
RBCH24B200_	CRBCH24CS****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	22.00 (558.8)	29.00 (736.6)	36.00 (914.4)	Single	MCB	CH	200	24	No
RBCH32L200_	CRBCH32ML****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	22.00 (558.8)	29.00 (736.6)	36.00 (914.4)	Single	MLO	CH	200	32	No
RCCH32B200_	CRBCH32CS****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	22.00 (558.8)	34.00 (863.6)	41.00 (1041.4)	Single	MCB	CH	200	32	No

Notes

① Catalog numbers shown with "_" at the end need one of the following suffixes to denote depth:

J = 3.75–4.25

K = 4.25–5.00

L = 5.00–6.00

N = Non-adjustable

Example: RTBR12L125J would signify an interior set with a depth range of 3.75- to 4.25-inches.

② *Denotes characters in the catalog number that relate to overall cover size.

Example: CRTBR12ML2620 would signify a cover 26.00 inches H x 20.00 inches W.

③ Amperes for MB panels is maximum; catalog number will reflect actual amperage of breaker included.

Single-Phase—Main Lug Loadcenters, Non-Metallic

2460SNM



Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Trim Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
	Spaces	Circuits					
40 ①	④	④	Indoor	Flush (no door)	2	②	TT120FLGNM ②③
	④	④	Indoor	Surface (no door)	2		TT120SLGNM ②③
60	2	4	Indoor	Flush (no door)	2	#14–2	2460FNM
	2	4	Indoor	Surface (no door)	2		2460SNM
	2	4	Indoor	Flush (no door)	2		2460FGNM ③
	2	4	Indoor	Surface (no door)	2		2460SGNM ③
	2	4	Outdoor	—	④		2460RNM

Notes

- ① Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ② This device has no main lugs. A Type BR or BD breaker is required to be backfed to supply power to branch breakers. This device is single-phase 120 Vac only. With the use of three Type BR breakers, there are two branch circuits available. With the use of three Type BD breakers, there are five branch circuits available.
- ③ Includes GB4NM ground bar.
- ④ Includes a GFCB240 breaker, factory installed.

CH Loadcenter Options and Accessories

CHSF2125



CHSF3125



CHFP



TDL



BINA



Field Installation and Parts

Description

Sub-feed lug blocks—two-pole, 125A, 3/4-inch (19.1 mm) spaces needed

Sub-feed lug blocks—three-pole, 125A, 3/4-inch (19.1 mm) spaces needed

Neutral/ground lug—add-on neutral or ground lug

Ordering
Quantity ①Catalog
Number

	1	CHSF2125
	1	CHSF3125
	1	NL20
	1	NL30
	1	NL300
Filler plates—3/4-inch (19.1 mm) space circuit breaker space	25	CHFP
CSR main circuit breaker filler plate (with hardware)	1	CSRFP
Door lock—12–42 circuits, and 100–225A	1	TDL
Sandlewood spray paint	1	SPCSW
ANSI-61 light gray touchup paint for outdoor loadcenters	1	SPC61
Isolated neutral assembly (computer circuits)	1	BINA
Circuit directory—adhesive backed	10	TCD
Cover screws	25	LCCS
Cover replacement latch 14-5/16 inch (363.55 mm) wide loadcenters only	1	CHRLS
Circuit marking strip (next to breakers)	10	CHMS
Circuit identification label (preprinted breaker labels next to breakers)	25	CHBL
Series rated caution label	25	SRL
Branch circuit numbering strip	20	CHNS
Bonding strap with screw	1	BSSUSE

Note

① Must be purchased in multiples of ordering quantities indicated.

Mechanical Interlock Covers

Covers mechanically interlock two breakers. Type A covers interlock two CH breakers mounted across from one another. Type B covers interlock a main Type CSR breaker with a Type CH.

CH8BRM Type A



CH8EFM Type B



Mechanical Interlocks

Type	Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers	
		Flush	Surface
A	CH12L125B	CH8BFM	CH8BSM
	CH16L125B		
	CH12L3125B		
	CH14B100B		
	CH20L125C	CH8CFM	CH8CSM
	CH24L125C		
	CH18L3125C		
	CH24L3125C		
	CH22B100C		
	CH22N100C		
	CH24L150D	CH8DFM	CH8DSM
	CH32L150D		
	CH24L3225D		
	CH30L3150D		
	CH42L225G	CH8GFM	CH8GSM
	CH42L3225G		
	Inner cover of Box B raintight	—	CH8BRM
Inner cover of Box C raintight	—	CH8CRM	
Indoor			
B	CH24B150E	CH8EFM	CH8ESM
	CH24B200E		
	CH32B150J	CH8JFM	CH8JSM
	CH32B200J		
	CH3242B200J		
	CH32N200J		
	CH32B225J		
	CH42B200K	CH8KFM	CH8KSM
	CH42N200K		
	CH42B225K		
Outdoor			
B	CH8B150RF	CH3RDF7M	—
	CH8B200RF		
	CH8N200RF		
	CH24B150R		
	CH24B200R		
	CH32B150R	CH3RDF9M	—
	CH32B200R		
	CH32N200R		
	CH32B225R		
	CH42B200R	CH3RDF10M	—
	CH42N200R		
	CH42B225R		

CH8BRM Type A



CH8EFM Type B



Mechanical Interlocks, continued

Type	Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers	
		Flush	Surface
Next Generation Power Center			
B	CHPC32B150L	CHPC8B32LFM	—
	CHPC32B200L		
	CHPC32N200L		
	CHPC42B150L	CHPC8B42LFM	—
	CHPC42B200L		
	CHPC42N200L		
	CHPC32B125TR	CH3RDF15M	—
	CHPC32B150TR		
	CHPC32B200TR		
	CHPC32N200TR		
	CHPC42B150TR	CH3RDF16M	—
	CHPC42B200TR		
	CHPC42N200TR		
	CHPC32B150TR	CH3RDF17M	—
	CHPC32B200TR		
	CHPC42B200BR	CH3RDF18M	—
Vintage ^①			
	CH20JJM200	CH7JFREPLM	—
	CH24JJM150		
	CH30JJM150		
	CH30JJM200		
	CH30JJM150H		
	CH3040JJMM200		
	CH304JJM150		
	CH304JJM200		
	CH304JJM200H		
	CH30KKM225	CH7KKFREPLM	—
	CH40KKM200H		
	CH40KKM225		
	CH40KKM200H		
	CH40KKM225H		
	CH304KKM200		
	CH304KKM200H		
	CH304LLM225	CH7LLFREPLM	—
	CH424LLM225H		

Note

^① If vintage part number does not match exactly, the cover may not fit. Simple variations such as an "N" at the end of the part number contain minor design variations that will prevent our cover from working with that particular loadcenter.

DS100H1



Field Installation Rainproof Conduit Hubs

Description	Conduit Size Inches (mm)	Ordering Quantity ^①	Catalog Number
Group 1—for use with 70, 100 and 125A MLO and MCB loadcenters and circuit breaker enclosures	0.75 (19.1)	1	DS075H1
	1.00 (25.4)	1	DS100H1
	1.25 (31.8)	1	DS125H1
	1.50 (38.1)	1	DS150H1
	2.00 (50.8)	1	DS200H1
Group 2—for use with 150, 200 and 225A MLO and MCB loadcenters and circuit breaker enclosures	2.00 (50.8)	1	DS200H2
	2.50 (63.5)	1	DS250H2
	3.00 (76.2)	1	DS300H2
Adapter kit—allows installing a Group 1 hub on devices arranged for Group 2 hubs	—	1	DS900AP
Group 1—small blank hub closure plate	—	1	DS900CP1
Group 2—large blank hub closure plate	—	1	DS900CP2

GBK14



Ground Bar Kits

Description (See Legend)	Length Inches (mm)	Ordering Quantity ^②	Catalog Number
●○○○○●	2.54 (64.5)	1	GBK5 ^②
●○○○○●■	3.59 (91.2)	1	GBK520 ^②
●○○○○●○○○○	4.29 (109.0)	1	GBK10 ^②
●○○○○●○○○○■	5.34 (135.6)	1	GBK1020 ^②
●○○○○●○○○○●	4.61 (117.1)	1	GBK13 ^②
●○○○○●○○○○○○○○	5.69 (144.5)	1	GBK14 ^②
●○○○○●○○○○○○○○■	6.74 (171.2)	1	GBK1420 ^②
●○○○○●○○○○○○○○○○○○	8.14 (206.8)	1	GBK21 ^②
●○○○○●○○○○○○○○○○○○■	9.19 (233.4)	1	GBK2120 ^②
○○○○○○●○○○○●○○○○○○	7.94 (201.7)	1	CH9GP21 ^{③④}

Ground Bar Legend

- = (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
- = (1) #6–2/0 Cu/Al
- = (1) 1/0–14 or (3) #10–12 Cu/Al
- = (1) #14–1/0 Cu/Al or (3) #14–#10 Cu/Al
- = Mounting hole

Grounded “B” Phase Adapters

Maximum Amperes	Three-Phase Loadcenter Types of Panels	Kit Catalog Number ^⑤
125	12–32 circuit main lug	CHGRD1
225	Main lug and CHH main breaker panels	CHGRD2
	CC main CB panels	CHGRD3

Neutral Bar Accessories

Description	Catalog Number ^⑤
Split neutral kit for 22-circuit 125A maximum	CHSN125C
Split neutral kit for 32-circuit 200A maximum	CHSN225J
Split neutral kit for 42-circuit 200A maximum	CHSN225K
Replacement neutral for all C type boxes	CHN125C
Replacement neutral for all D type boxes	CHN125D
Replacement neutral for all L type boxes	CHN225L
Isolated Neutral Assembly (computer circuits)	BINA

Notes

- ① Must be purchased in multiples of ordering quantities indicated.
- ② Distance between mounting holes is 1-3/4 inches (44.5 mm).
- ③ For single- and three-phase 400A loadcenters.
- ④ Distance between mounting holes is 2-13/32 inches.
- ⑤ Cannot be used in Safety Breaker Panels. Classic Plus Panels only.

1.1

Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

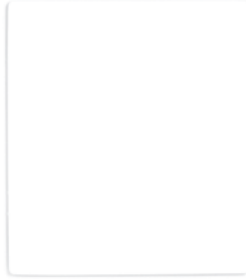
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Decorator Cover Accessory

- For easy use with CH loadcenters mounted in living space
- Easily wallpapered or painted to match any decor
- Loadcenter accessory—exclusively from Eaton



Now you see it ...



... Now you don't.

Decorator Cover Accessory ^①

Catalog Number

Corresponding Cover	Existing CH Loadcenter Cover
CH8BF	CH8KDNB
CH8CF	CH8KDNC
CH8DF/EF	CH8KDND
CH8GF/JF	CH8KDNJ
CH8KF	CH8KDNK

CH Loadcenter Goof Collars

Don't let an ugly drywall problem ruin a beautiful electrical installation.

Eaton's Goof Collar is designed to cover gaps between the finished drywall and loadcenter enclosure. This is often necessary when upgrading the electrical service and the drywall surrounding the panel is damaged. The collar allows 2 inches of overhang beyond the standard flush trim.

Currently available in three sizes for the CH style loadcenters.

Goof Collars are also available for the BR style loadcenters upon request. Please contact the Lincoln Flex Center at 1-800-330-6479 for questions and product opportunities.



Before



After

Goof Collars

Inches (mm) Height	Width	Catalog Number	
		Loadcenter Cover	Goof Collar
26.00 (660.4)	19.00 (482.6)	CH8CF	CH8CFC1926
39.00 (990.6)	19.00 (482.6)	CH8JF	CH8JFC1939
42.00 (1066.8)	19.00 (482.6)	CH8KF	CH8KFC1942

Note

^① For interlock covers for loadcenters not listed in chart, please contact the Flex Center at 1-800-330-6479.

Dimensions

Approximate Dimensions in Inches (mm)

Residential/Commercial/Unit Enclosure—Box Sizes

Note: Box sizes do not include covers/fronts.

Residential Loadcenters

Box Size	Height	Width	Depth
NEMA Type 1 Indoor			
5	9.50 (241.3)	4.50 (114.3)	3.13 (79.4)
6	11.38 (288.9)	6.88 (174.6)	3.39 (86.1)
7	13.00 (330.2)	11.00 (279.4)	3.69 (93.7)
B	16.75 (425.5)	14.31 (363.5)	3.88 (98.4)
C	21.00 (533.4)	14.31 (363.5)	3.88 (98.4)
D	29.13 (739.8)	14.31 (363.5)	3.88 (98.4)
E	29.13 (739.8)	14.31 (363.5)	3.88 (98.4)
G	34.13 (866.8)	14.31 (363.5)	3.88 (98.4)
J	34.13 (866.8)	14.31 (363.5)	3.88 (98.4)
K	37.00 (939.8)	14.31 (363.5)	3.88 (98.4)
L	39.00 (990.6)	14.31 (363.5)	3.88 (98.4)
NEMA Type 3R Outdoor			
5R	9.50 (241.3)	4.50 (114.3)	3.13 (79.4)
6R	11.75 (298.5)	6.50 (165.1)	4.50 (114.3)
7R	13.00 (330.2)	11.00 (279.4)	3.69 (93.7)
B	16.75 (425.5)	14.31 (363.5)	5.19 (131.8)
C	21.00 (533.4)	14.31 (363.5)	5.19 (131.8)
D	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
E	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
G	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
J	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
K	37.00 (939.8)	14.31 (363.5)	5.19 (131.8)
L	39.00 (990.6)	14.31 (363.5)	5.19 (131.8)

Commercial Loadcenters

Box Size	Height	Width	Depth
NEMA Type 1 Indoor			
P	54.38 (1381.1)	21.00 (533.4)	6.00 (152.4)
PM	62.63 (1590.7)	21.00 (533.4)	6.00 (152.4)

Types ECB and ECC Unit Enclosures

Height	Width	Depth
NEMA Type 1 Indoor		
23.25 (590.6)	8.88 (225.4)	4.50 (114.3)
NEMA Type 3R Outdoor		
23.69 (601.7)	9.31 (236.5)	5.44 (138.1)

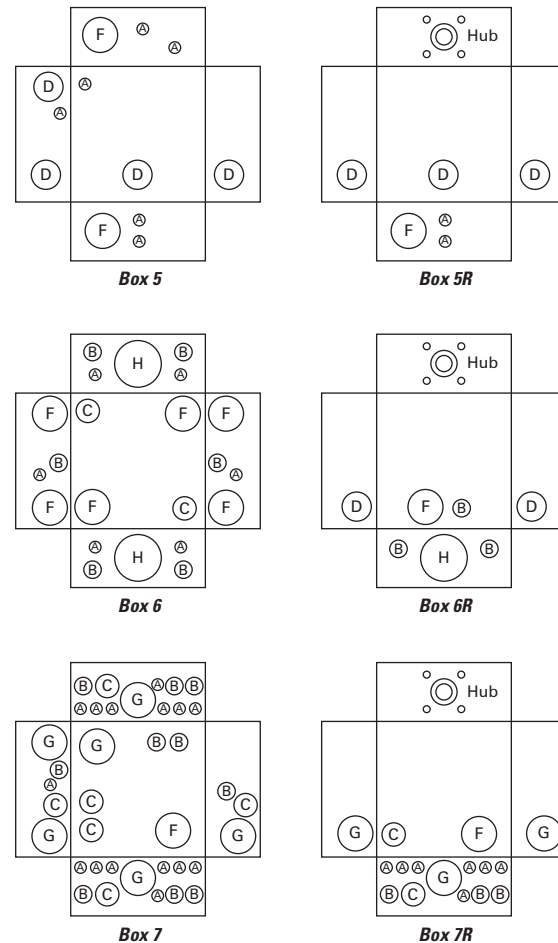
Residential Loadcenter Knockout

Residential NEMA Type 1 Indoor and NEMA Type 3R Outdoor Enclosures.

Knockouts for Box Sizes 5, 6, 7, 5R, 6R, 7R

Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—
D	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)
E	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	—
F	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
G	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—
H	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)
I	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—

Knockout Positions



1.1

Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

1

Approximate Dimensions in Inches (mm)

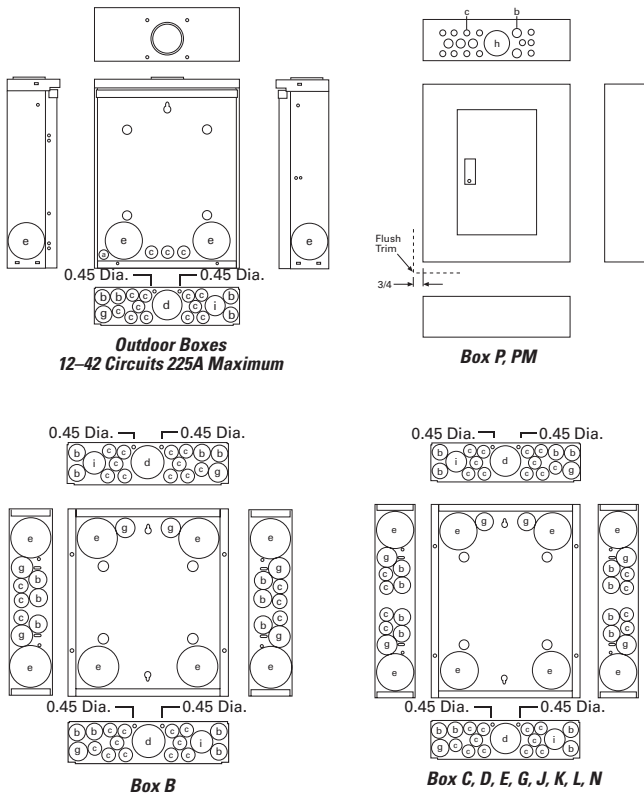
Residential and Commercial Loadcenter Knockout

Residential NEMA Type 1 indoor and NEMA Type 3R outdoor enclosures.

Knockouts for Box Sizes 8, 8R, P, PM, B, C, D, E, G, J, K, L, N and Outdoor Boxes 12–60 Circuits

Code	Diameter				
a	0.75 (19.1)	—	—	—	—
b	0.50 (12.7)	0.75 (19.1)	—	—	—
c	0.50 (12.7)	—	—	—	—
d	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
e	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	—
f	0.75 (19.1)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—
g	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—	—
h	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	—	—
i	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
j	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—	—
k	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—	—
m	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)
n	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—
p	2.00 (50.8)	2.50 (63.5)	—	—	—

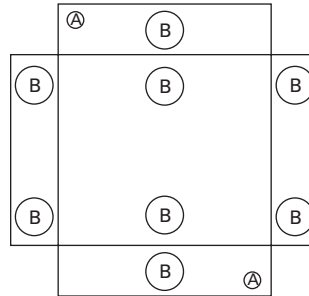
Knockout Diagram



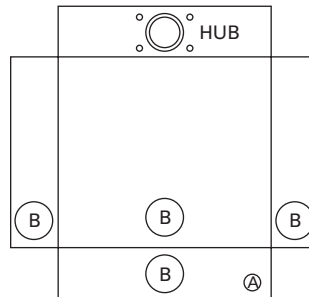
Type ECB and ECC Unit Enclosure Knockout

Code	Diameter				
NEMA Type 1 Indoor (Flush and Surface Trims)					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)
NEMA Type 3R Outdoor					
A	0.50 (12.7)	—	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)	2.50 (63.5)

NEMA Type 1—Indoor



NEMA Type 3R—Outdoor



Technical Data and Specifications**General**

- A. The Contractor shall furnish and install loadcenters incorporating circuit breakers of the number, rating and type as specified herein and as shown on the contract drawings.
- B. The loadcenter and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL and NEMA including:
 1. UL 67—standards for panelboards
 2. UL 50—standards for cabinets and boxes
 3. UL 489—standards for molded case circuit breakers
 4. Federal Spec Classification W-C 375
 5. UL 1699 —ball fault interrupting

Qualifications

- A. The manufacturer of the loadcenter shall be the manufacturer of the circuit breaker within the load center. All breakers shall be full size.
- B. For the equipment specified herein, the manufacturer shall be ISO® 9000 certified.
- C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of seven (7) years.

Manufacturers

- A. Eaton

Ratings

- A. Loadcenters shall be rated for 240 Vac and shall have short-circuit ratings as shown on the drawings or as herein scheduled, but not less than 10,000 amperes rms symmetrical.
- B. Breakers shall be full size and a minimum of 125A frame. Breakers 10 –125A trip size shall take up the same pole spacing.
- C. Loadcenters shall be labeled with a UL short-circuit rating. When series ratings are applied with integral or remote devices, a label shall be provided. Series ratings shall cover all trip ratings of installed frames. It shall state the conditions of the UL series ratings including:
 1. Size and type of upstream device.
 2. Branch devices that can be used.
 3. UL series short-circuit rating.

Construction

- A. All interiors, with the exception of the branch circuit breakers shall be completely factory assembled with main breakers, main lugs or no main device.
- B. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.
- C. Physical means must be provided to prevent the installation of more overcurrent devices than that number for which the enclosure was designed. Full size breakers are required.

Bus

- A. Bus bars for the main and cross connectors shall be of silver flash plated copper construction in accordance with UL standards. Bussing shall be braced to 65 kAIC.
- B. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection of same ampacity as branch.

Wiring/Termination

- A. All wire connectors and terminals shall be of the anti-turn solderless type and suitable for copper or aluminum wire of the sizes indicated. All connectors shall meet the "Requirements for Wire Connectors and Soldering Lugs" UL 486B.
- B. All loadcenters where marked shall be suitable for use with 60/75°C rated wire.

Circuit Breakers

- A. Circuit breakers shall be molded case type, 3/4-inch (19.1 mm) wide per pole. Multipole circuit breakers shall be of a stack pole design to provide electrical phase isolation and have an internal common trip.
- B. Each pole of the circuit breaker will have inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors. Circuit breakers shall be quick-make/quick-break.
- C. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. Breakers shall be calibrated after assembly.

- D. All circuit breakers shall be operated by a toggle-type handle and multipole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide good visual trip indication.
- E. Contacts shall be of non-welding silver alloy.
- F. All branch breaker handles shall be of a different color than the case of the breaker.
- G. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60° or 75°C wire.
- H. Breakers shall be SWD rated and/or HACR rated as required.
 1. Arc fault interrupting circuit breakers, (AFC), shall be provided on all 15 and 20A single-phase 120/240 Vac circuits except those indicated as remote controlled breakers. AFI breakers shall be "Classified for mitigating the effects of arcing faults," or conforming to UL Standard 1699 and as defined by per Article 210.12 Section A of the NEC Code.

Enclosures

- A. Loadcenters shall have NEMA 1 general purpose or NEMA 3R rainproof enclosures as indicated on the drawings and shall be surface or flush mounted except where noted.
- B. For indoor applications, enclosures shall be rated NEMA 1. Enclosures shall be manufactured from cold-rolled code-gauge sheet steel having multiple knockouts and painted per paint specification. For outdoor applications, enclosures shall be rated NEMA 3R. Enclosures shall be manufactured from galvanized steel which shall be painted per the painted as specified. Enclosures shall be of sufficient size to meet or exceed NEC wire bending space.
- C. The cover shall have an easy adjustment feature for flush applications.
- D. Boxes shall be factory assembled into a single rigid structure.
- E. Provide circuit breaker marking labels and directories.

Finish

- A. Boxes and trims shall be finished with a high scratch-resistant aesthetically pleasing finish. The finish shall be polyurethane coating electrostatically applied to a thickness of 1.8 to 2 mils.

All loadcenters shall be provided with provisions for accepting a paintable or wall paperable decorator accessory cover. Where loadcenters are installed in living areas, provide manufacturer designed and tested decorator cover kits.

Plug-On Circuit Breakers



CH Circuit Breakers

Product Description

Quick-make, quick-break switch mechanism combined with inverse time element tripping operation and trip-free handle design. Type CH circuit breakers trip to the OFF position, eliminating nuisance callbacks. The CHF family also includes a trip flag to differentiate between a trip and the breaker being turned off. The thermal-magnetic tripping curve avoids nuisance tripping on mild overloads while reacting almost instantaneously to severe short-circuit conditions. Multipole breakers have internal common trip connection to operate all poles simultaneously. Handles are marked with ON-OFF indication and ampere rating of the breaker.

Special Application Plug-On Circuit Breakers—Type CH 10 kAIC 120 Vac and 120/240 Vac

Branch Feeder Type Arc Fault Circuit Breakers

A branch feeder type arc fault circuit interrupter is a device intended to mitigate high current arcing faults in the complete circuit, including connected cords. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults.

The branch feeder type AFCI is required in the 1999 and 2002 National Electrical Code.

The Combination Type AFCI is required in all subsequent editions of the National Electrical Code.

Combination Type Arc Fault Circuit Breakers

A combination type arc fault circuit interrupter is a device that offers mitigation of high current arcing faults in the complete circuit, including connected cords. In addition it provides direct detection of persistent low current arcing faults down to 5 amps with associated mitigation of fire hazards in the cords connected to the outlets. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults. The current level of low current arcing faults is limited by the load.

Ground Fault Circuit Breakers—Ground Fault Application Notes

Single-pole Type CHGFIs are designed for use in two-wire, 120 Vac circuits. The diagram on Page V1-T1-40 shows a typical wiring configuration.

Contents

Description

	<i>Page</i>
Overview	V1-T1-2
CH Specialty Products	V1-T1-14
CH Loadcenter Options and Accessories	V1-T1-22
CH Circuit Breakers	
Product Selection	V1-T1-32
Options and Accessories	V1-T1-38
Technical Data and Specifications	V1-T1-40
Wiring Diagrams	V1-T1-40

Two-pole Type CHGFIs are designed for use in three-wire, 120/240 Vac circuits, 120 Vac multiwire circuits employing common, neutral and two-wire, 240 Vac circuits obtained from a 120/240 Vac source.

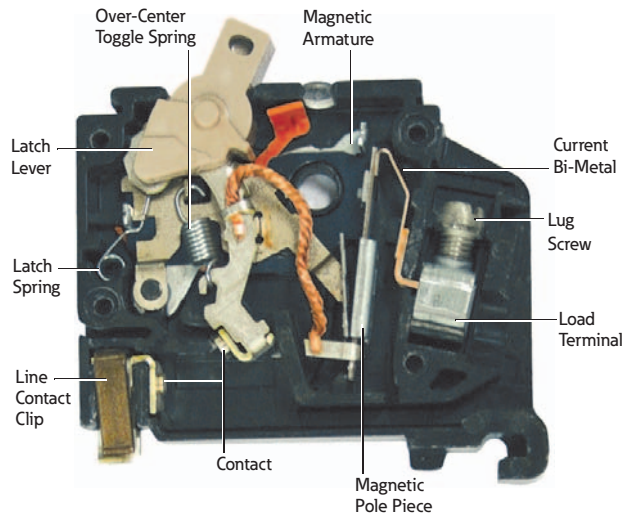
Diagrams on Page V1-T1-40 illustrate typical wiring configurations for 120/240 Vac multiwire circuits.

The diagram on Page V1-T1-40 depicts a 240 Vac, two-wire circuit. Note the “panel neutral” conductor connects to the neutral bar,

even though the neutral is not included in the load circuit. This connection is necessary to supply a 120 Vac power source to the ground fault sensing circuit.

The figures are shown with a 120/240 Vac, single-phase, three-wire power source, but are also applicable to a 120/208 Vac, three-phase, four-wire power supply. For all figures, the electrical operation of the Type CHGFI is not affected by the equipment ground.

Features



1.1

Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

1




Product Selection

10 kAIC, 120 Vac, 120/240 Vac and 240 Vac

Type CH Plug-On Circuit Breakers





Type CH Breakers, 3/4-Inch (19.1 mm) per Pole 120, 120/240 or 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number		
		Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton	Three-Pole 240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton
10	(1) #14-8 ①	 CH110	 CH210	 CH310
15	(2) #14-10 ①② (1) #14-6 ③	CH115 ⑦⑧	CH215 ⑧	CH315 ⑧
20		CH120 ⑦⑧	CH220 ⑧	CH320 ⑧
25		CH125 ⑧	CH225 ⑧	CH325 ⑧
30		CH130 ⑧	CH230 ⑧	CH330 ⑧
35	#14-2 ① #14-6 ③	CH135 ⑧	CH235 ⑧	CH335 ⑧
40	#10-1/0 ④	CH140 ⑧	CH240 ⑧	CH340 ⑧
45	#14-2 ⑤ #3/0 ⑥	CH145 ⑧	CH245 ⑧	CH345 ⑧
50		CH150 ⑧	CH250 ⑧	CH350 ⑧
60		CH160	CH260	CH360
70		CH170	CH270	CH370
80		—	CH280	CH3080
90		—	CH290	CH3090
100		—	CH2100	CH3100
110		—	CH2110	—
125		—	CH2125	—

Type CH Plug-On Circuit Breakers



CHF Breakers with Mechanical Trip Flag

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number	
		Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton
10	(1) #14-8 ①	 CHF110	 CHF210
15	(2) #14-10 ①②	CHF115 ⑦⑧	CHF215 ⑧
20		CHF120 ⑦⑧	CHF220 ⑧
25		CHF125 ⑧	CHF225 ⑧
30		CHF130 ⑧	CHF230 ⑧
35	#14-2 ①	CHF135 ⑧	CHF235 ⑧
40	#10-1/0 ④	CHF140 ⑧	CHF240 ⑧
45	#14-2 ⑤	CHF145 ⑧	CHF245 ⑧
50		CHF150 ⑧	CHF250 ⑧

Notes

- ① For single- and two-pole breakers.
- ② Solid and stranded wire can be used together.
- ③ For three-pole breakers.
- ④ Single-pole 60-70A, two-pole 80-125A, three-pole 40-100A.
- ⑤ Single-pole 40-50A, two-pole 40-70A.
- ⑥ Two-pole 150A.
- ⑦ Switching duty rated.
- ⑧ HACR rated.

For factory-installed options, refer to **Page V1-T1-39**.

Plug-On Branch Feeder Type Arc Fault Circuit Breakers, Type CH 10 kAIC, 120 Vac and 120/240 Vac

Type CH AFCI Single-Pole Circuit Breaker



Combination Type CH AFCI 3/4-Inch (19.1 mm) Wide Circuit Breakers

Poles	Ampere Rating	Catalog Number
Standard Pigtail		
Single-pole 10 kAIC	15	CHFCAF115
	20	CHFCAF120
Two-pole 10 kAIC	15	CHCAF215
	20	CHCAF220

Type CH AFCI Single-Pole Circuit Breaker



Branch Type CH AFCI 3/4-Inch (19.1 mm) Wide FIRE-GUARD® Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI	CH115AF ^①
	20	AFCI	CH120AF ^①
Two-pole 10 kAIC ^{②③}	15	AFCI common trip	CH215AF
	20	AFCI common trip	CH220AF

Plug-On Combination Type Arc Fault Circuit Breakers and Ground Fault, Type CH 10 kAIC, 120 Vac and 120/240 Vac^④

Type CH AFCI Single-Pole PON Combo Circuit Breaker



Combination Type CH AFCI 3/4-Inch (19.1 mm) and CHGFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI plug-on neutral	CHFCAF115PN
	20	AFCI plug-on neutral	CHFCAF120PN
	15	GFCI plug-on neutral	CHFGF115PN
	20		CHFGF120PN
	25		CHFGF125PN
	30		CHFGF130PN

Notes

- ① Clamshell packaging available with CS modification code on the end of catalog number.
- ② Common trip refers to two-pole 240V load application sourced by 120/240 Vac (see diagram on [Page V1-T1-40](#)).
- ③ Independent trip refers to two-pole multi-wire, home run or shared neutral circuits (see diagrams on [Page V1-T1-40](#)).
- ④ Requires plug-on neutral loadcenter.

1.1

Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

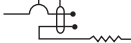
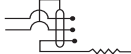
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Plug-On Ground Fault Circuit Breakers, Type CH 10 kAIC, 120 Vac and 120/240 Vac

Type CH Single-Pole





Type CH Ground Fault Circuit Breakers (5 Milliampere) 3/4-Inch (19.1 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C ①	Catalog Number—1 per Shelf Carton	
		Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces
15	#14–6	 CHFGF115	 CH215GF
20	#14–6	CHFGF120	CH220GF
25	#14–6	CHFGF125	CH225GF
30	#14–6	CHFGF130	CH230GF
35	#14–6	—	CH235GF
40	#14–6	—	CH240GF
45	#14–6	—	CH245GF
50	#14–6	—	CH250GF
60	#14–6 ①	—	CH260GF

Type CH Two-Pole



Type CH Ground Fault Equipment Protectors (30 Milliampere) 3/4-Inch (19.1 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C ①	Catalog Number—1 per Shelf Carton	
		Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces
15	#14–6	 CHFEP115	 CH215EPD
20	#14–6	CHFEP120	CH220EPD
25	#14–6	CHFEP125	—
30	#14–6	CHFEP130	CH230EPD
40	#14–6	—	CH240EPD
50	#14–6	—	CH250EPD
60	#14–6 ①	—	CH260EPD

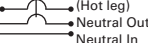
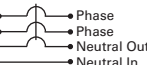
Type CH Switching Neutral Breakers—10 kAIC, 120 Vac and 120/240 Vac

Used to open the neutral along power line(s) for applications of gas pumps.

CH220SW



3/4-Inch (19.1 mm) per Pole 120/240 or 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number—1 per Shelf Carton	
		Two-Pole 120 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces	Three-Pole 120/240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces
15	#14–8	 CH215SW ②	 CH315SW ③
20	#14–8	CH220SW ②	CH320SW ③
30	#14–8	CH230SW ②	CH330SW ③
40	#14–8	CH240SW ②	CH340SW ③
50	#14–8	CH250SW ②	CH350SW ③




Notes

- ① 60A breaker listed for 75°C Cu wire only.
- ② For circuit breakers with shunt trip, add ST suffix. Shunt trip requires one additional pole space.
- ③ Switching duty rated.

Type CH-HID Circuit Breakers—10 kAIC, 120 Vac, 120/240 and 240 Vac

Suitable for use in circuits for fluorescent and high intensity discharge lighting. Also suitable for HACR applications.


3/4-Inch (19.1 mm) per Pole 120 Vac, 120/240 and 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number	Three-Pole 240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
				
15	#14–8	CH115HID	CH215HID ①	CH315HID
20	#14–8	CH120HID	CH220HID	CH320HID
30	#14–8	CH130HID	CH230HID	CH330HID

Non-CTL Plug-On Replacement Circuit Breakers, Type CHNT 10 kAIC, 120/240 Vac

For use as replacement in loadcenters built prior to 1968 and within the current style 2–8 circuit loadcenters as indicated in the loadcenter section.

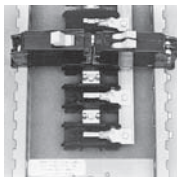
3/4-Inch (19.1 mm) per Pole 120 Vac, Non-CTL 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number
		 120/240 Vac 120/240 Vac
15–15	#14–8	CHNT1515 ②③
15–20	#14–8	CHNT1520 ②③
20–20	#14–8	CHNT2020 ②③


CTL Plug-On Circuit Breakers, Type CHT Twin 10 kAIC, 120/240 Vac

All circuit breakers have rejection feature. Use only with loadcenters marked for use with CHT breakers.

Type CH and CHT
Circuit Breakers
Mounted in Twin
Breaker Panel



Twin (CTL) 3/4-Inch (19.1 mm) per Pole 120 Vac Class CTL 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number
		 120/240 Vac 120/240 Vac
15–15	#14–8	CHT1515 ②③
15–20	#14–8	CHT1520 ②③
20–20	#14–8	CHT2020 ②③




Notes

- ① CH215HID is rated for 120/240V.
- ② Switching duty rated.
- ③ HACR rated.

Type CHP Commercial Breakers—10 kAIC, 120 Vac, 120/240 Vac and 240 Vac

Note: CHP breakers feature on-off and trip positions for commercial applications.

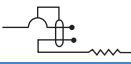
3/4-Inch (19.1 mm) per Pole 120, 120/240 or 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number	Three-Pole 240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
				
10	(1) #14–8 ^①	CHP110	CHP210	CHP310
15	(2) #14–10 ^{①②} (1) #14–6 ^③	CHP115 ^{⑥⑦}	CHP215 ^⑦	CHP315 ^⑦
20		CHP120 ^{⑥⑦}	CHP220 ^⑦	CHP320 ^⑦
25		CHP125 ^⑦	CHP225 ^⑦	CHP325 ^⑦
30		CHP130 ^⑦	CHP230 ^⑦	CHP330 ^⑦
35	#14–2 ^① #14–6 ^③	CHP135 ^⑦	CHP235 ^⑦	CHP335 ^⑦
40	#10–1/0 ^④	CHP140 ^⑦	CHP240 ^⑦	CHP340 ^⑦
45	#14–2 ^⑤	CHP145 ^⑦	CHP245 ^⑦	CHP345 ^⑦
50		CHP150 ^⑦	CHP250 ^⑦	CHP350 ^⑦
60		CHP160 ^⑦	CHP260 ^⑦	CHP360 ^⑦
70		CHP170	CHP270	CHP370
80		—	CHP280	—
90		—	CHP290	—
100		—	CHP2100	CHP3100
110		—	CHP2110	—
125		—	CHP2125	—

Type CHP-GFCI Circuit Breakers—10 kAIC, 120 Vac and 120/240 Vac

Note: CHP breakers offer on-off and trip positions for commercial applications.

5 Milliampere—3/4-Inch (19.1 mm) per Pole 120V and 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space 1 per Individual Carton Catalog Number
		
15	#14–6	CHP115GF
20	#14–6	CHP120GF
30	#14–6	CHP130GF

Notes

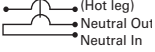
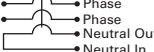
- ① For single- and two-pole breakers.
- ② Solid and stranded wire can be used together.
- ③ For three-pole breakers.
- ④ Single-pole 60–70A, two-pole 80–125A, three-pole 40–100A.
- ⑤ Single-pole 40–50A, two-pole 40–70A.
- ⑥ Switching duty rated.
- ⑦ HACR rated.

CHP breakers offer on-off and trip positions for commercial applications.

Type CHP Neutral Switching Breakers—10 kAIC, 120 Vac and 120/240 Vac



Used to open the neutral along power line(s) for applications of gas pumps.

3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Two-Pole 120 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 1 per Shelf Carton Catalog Number	Three-Pole 120/240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 1 per Shelf Carton Catalog Number
			
15	#14–8	CHP215SW ①	CHP315SW ①
20	#14–8	CHP220SW ①	CHP320SW ①



Type CH-M50 High Ambient Breaker

3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
			
15	(1) #14–8	CH115M50	CH215M50
20	(2) #14–10	CH120M50	CH220M50
25		CH125M50	CH225M50
30		CH130M50	CH230M50
35		CH135M50	CH235M50
40		CH140M50	CH240M50
45		CH145M50	CH245M50
50		CH150M50	CH250M50
60		—	CH260M50
70		—	CH270M50

Type CH-HM and CHP-HM High Magnetic Breakers

3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton Catalog Number
			
15	(1) #14–8	CH115HM	CH215HM
20	(2) #14–10	CH120HM	CH220HM
15	(1) #14–8	CHP115HM	CHP215HM
20	(2) #14–10	CHP120HM	CHP220HM

Note

① For circuit breakers with shunt trip, add ST suffix. Shunt trip requires one additional pole space, obtain pricing from [Page V1-T1-39](#).

Options and Accessories

CHHT



CHPL



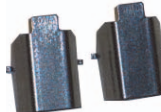
CHPLGF



MCBPL



CHLO



CH125RB



CH9MB270



CHML



Field Installation Kits and Parts

Description	Ordering Quantity ^①	Catalog Number
Handle Ties ^②		
Handle tie bar for physically joining the handles of two adjacent single-pole Type CH circuit breakers (molded plastic handle cover)	25	CHHT
Handle Lockoffs ^{③④}		
Padlockable device for locking the handle of single-, two- or three-pole Type CH circuit breakers (escutcheon mounted) ^⑤	1	CHPL
Padlockable device for locking the handle of a single-, two- or three-pole Type CHGFI circuit breaker (escutcheon mounted) ^⑤	1	CHPLGF
Padlockable device for locking the handle of main circuit breaker Types CC and CCH into the ON or OFF position.(screw mounted) ^⑥	1	CCPL
Padlockable device for locking the handle of main breaker Types BW and CSR into the ON or OFF position (escutcheon mounted) ^⑤	1	MCBPL
Handle Lockdogs ^{④⑦}		
Device used to secure handle in ON or OFF position for single-pole Type CH circuit breakers (handle mounted) ^⑧	10	CHLO
Hold-Down Kits ^⑨		
Hold-down retainer kit for single-, two-, three-pole Type CH circuit breakers. For 6–24 circuit 125A single- and three-phase, 12–42 circuit single-phase 225A and 24–42 circuit three-phase 225A MLO Type CH loadcenters	1	CH125RB
Hold-down retainer kit for single-, two-, three-pole Type CH circuit breakers for 2–4 circuit MLO CH loadcenters.	1	CH125RB24
Mounting Bases		
Mounting base for two-pole Type CH circuit breaker—70A maximum	1	CH9MB270
Main Breaker Lug Kits		
Types CC and CCH main breaker lug kit (2) 300 kcmil	1	CCL300
Type CSR main breaker lug kit (2) 300 kcmil	1	MCBL300
Mechanical Interlock		
Type CH for two-, three- and four-pole breakers	10	CHML

Notes

- ① Must be purchased in multiples of ordering quantities indicated.
- ② Handle ties: typically used to join two similar independent single-pole breakers to form a two-pole noncommon trip breaker.
- ③ Handle lockoffs: devices that use a padlock to lock the circuit breaker's handle in the ON or OFF position.
- ④ Requires one additional pole space.
- ⑤ Escutcheon mounted: device mounted semipermanently to the face of the circuit breaker and secured by the loadcenter deadfront.
- ⑥ Screw mounted: device permanently mounted to the face of the circuit breaker by the use of a non-removable screw.
- ⑦ Handle lockdogs: devices that are used to secure a circuit breaker's handle in the ON or OFF position. Handle lockdogs are not padlockable devices.
- ⑧ Handle mounted: device mounted above or below handle using spring pressure.
- ⑨ Hold-down kits: devices used to secure the circuit breaker to the loadcenter for back-feed main application. See NEC Article 384.16(g).

Shunt Trip Options

Description		
Type	Volts	Catalog Number Suffix Adder ^①
CSR	12 DC	SR12
CSR	24 DC	SR24
CSR	120 AC	SR01
CH	120 AC	ST ^②
CC	12 DC	SR12
CC	24 DC	SR24
CC	120 AC	SR01
CC	208 AC	SR08
CC	240 AC	SR02

Handle Position Changeability Chart

Handle Lockoff and Lockdog Types	To Change Handle Position from ON to OFF or OFF to ON You Must...		
	Remove Padlock	Remove Device	Remove Loadcenter Deadfront
Lockoff escutcheon mounted	Remove	—	—
Lockoff screw mounted	Remove	—	—
Lockdog handle mounted	N/A	Remove	—

Notes

- ① Add suffix indicated to end of breaker catalog number.
- ② Requires one additional pole space.

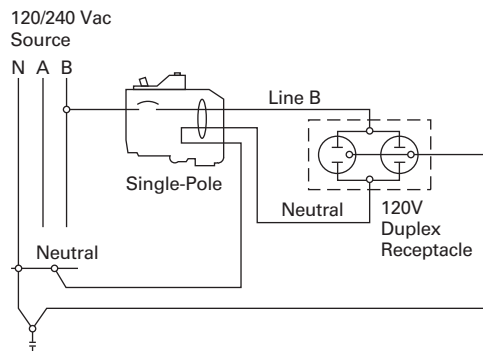
Technical Data and Specifications

Ratings

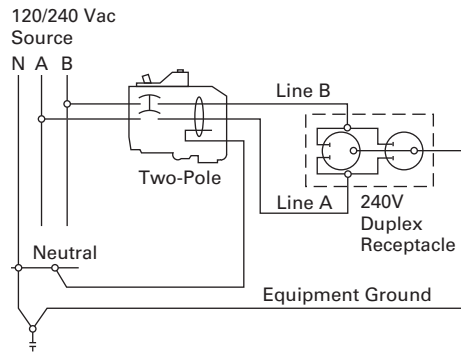
Single- and two-pole CH breakers rated 15 and 20A have low instantaneous magnetic trip levels. The 15 and 20A breakers with "HM" suffix have high magnetic trip settings recommended for circuits with inherently high inrush currents. All Type CH breakers are marked for heating, air conditioning and refrigeration (HACR) equipment application. Single-pole 15–20A breakers are also suitable for switching duty (SWD). Shunt trip coils operate on 120 Vac and require one additional pole space per breaker.

Wiring Diagrams

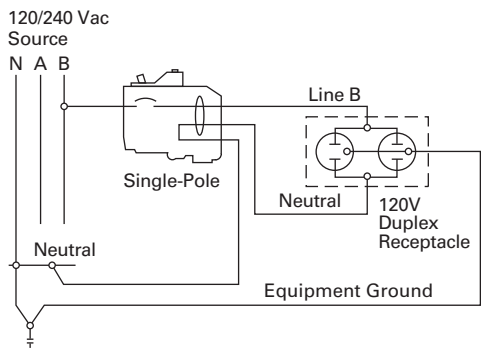
Typical Single-Pole



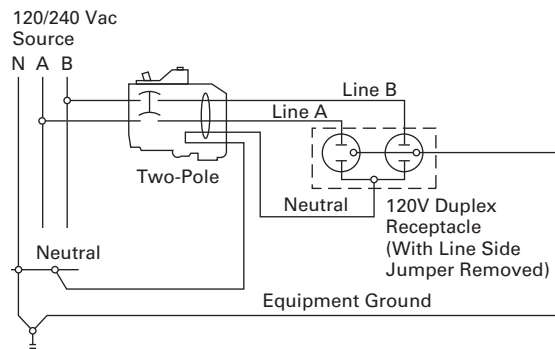
Two-Pole 240V Load Application Sourced by 120/240 Vac



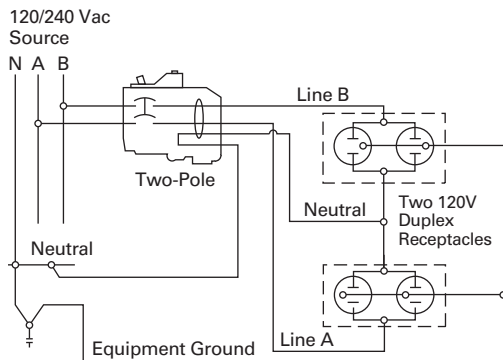
Single-Pole 120V Load Application Sourced by 120/240 Vac



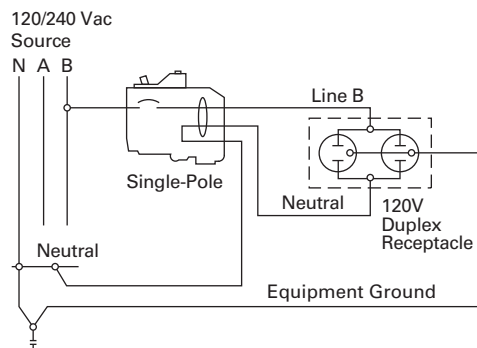
Two-Pole Shared Neutral with Duplex Receptacle Application



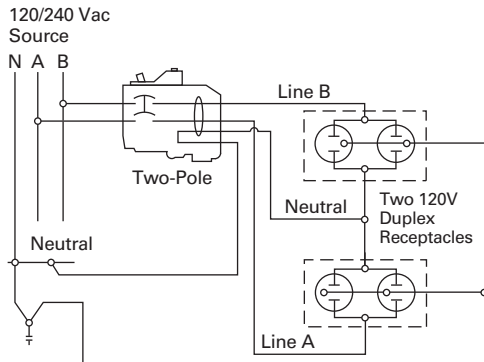
Two-Pole Shared Neutral with Multi-Duplex Receptacle Application



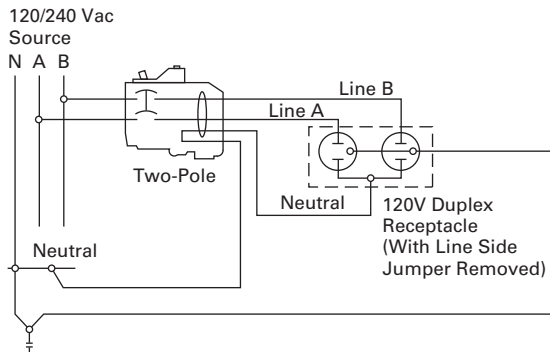
Single-Pole 120V Duplex Receptacle Application



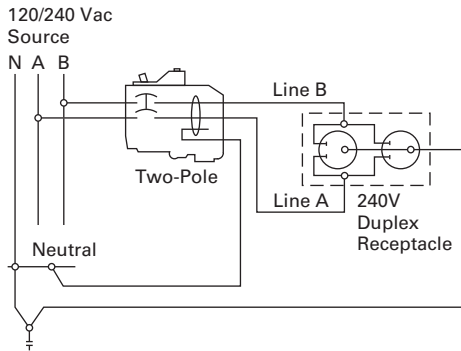
Two-Pole 120V Multi-Duplex Receptacle Application



Two-Pole 120V Duplex Receptacle Application



Two-Pole 240V Duplex Receptacle Application



1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

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Type BR Loadcenters and Circuit Breakers



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Riser Panel	V1-T1-58
Type BR Renovation Loadcenter	V1-T1-59
Type BR Retrofit Interior Kits	V1-T1-70
BR Circuit Breakers	V1-T1-72

Overview

Product Selection Guide

BR Loadcenters

Description

Service

Single-phase, three-wire, 120/240 Vac

Three-phase, four-wire, 208Y/120 Vac
Three-phase, three-wire, 240 Vac delta

Short-Circuit Current Rating

10 kAIC: All single- and three-phase loadcenters 70–225A, 8 to 42 circuits
22 kAIC: All convertible loadcenters using 125A rated Type BRH main breakers or selected factory installed 125A rated Type BRH main breaker

25 kAIC: All convertible and factory-installed single-phase loadcenters rated 150 and 200A using Type CSR main breakers

Main Breaker/Main Lug Loadcenters

Single-phase
Main breaker: 100, 125, 150, 200, 225, 400, 600A
Main lugs: 70, 125, 150, 200, 225, 400, 600A

Three-phase
Main breaker: 100, 125, 150, 200, 225, 400, 600A
Main lugs: 100, 125, 150, 200, 225, 400, 600A

Convertible Loadcenters

Main breaker: single-phase up to 200A and three-phase up to 225A

Main lugs: single-phase up to 200A and three-phase up to 150A

Branch Breakers

Types BR, BRH and BRHH: 10–150A. single-, two- and three-pole; selected amperage available in switching duty, HACR, shunt trip and high magnetic setting
Type GFCB: 15–60A
Types BJ and BJH: 125–225A; two- and three-pole
Type BD Twin: 10–50A; two of one-pole; take one 1-inch (25.4 mm) space

Type BQ and BQC Multibreaker: 15–30A. Two of two-pole or one two-pole and two one-pole; takes two 1-inch (25.4 mm) spaces
Type BRW: 15–30A; two-pole water heater breakers
Type BRSN: 15–30A; two-pole switching neutral breakers
Type BR 15–100A; two-pole, 240 Vac delta breakers
BR-AFCI arc fault circuit interrupter

Enclosures

NEMA Type 1 indoor
NEMA Type 3R outdoor

NEMA 4X
Meets or exceeds UL requirements for indoor or outdoor applications

Loadcenter and Breaker Accessories

Branch circuit breaker:
Auxiliary components Hold-down kits Handle ties
Lockoffs Lockdogs

Complete line of ground bar kits 5, 10, 14 and 21 circuit, some with additional #2/0 lugs; each terminal will accommodate: (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al

Main and sub-feed lugs 125, 150, 225A—two- and three-pole

Shunt trips

Surge protection:
Single-phase plug-on surge protector Single-phase bottle type surge protector
Three-phase bottle type surge protector Single-phase whole home surge protector

Universal rainproof conduit hubs
Group One: 3/4, 1, 1-1/4, 1-1/2, 2 inches (19.1, 25.4, 31.8, 38.1, 50.8 mm)
Group Two: 2, 2-1/2, 3 inches (50.8, 63.5, 76.2 mm)

Adapter plate

Bussing

Tin-plated aluminum as standard

Limited copper bus panels available

Product Description

Loadcenters are enclosures specifically designed to house the branch circuit breakers and wiring required to distribute power to individual circuits. They contain either a main breaker when used at the service entrance point or a main lug when used as a sub-panel to add circuits to existing service. The main breaker protects the main entire panel and can be used as a service disconnect. The branch breakers protect the wires leading to individual electrical loads such as fixtures and outlets.

Features, Benefits and Functions

Loadcenter Construction

Eaton's Type BR loadcenters have standard tin-plated aluminum bus with a limited availability of copper bus. The sum of the handle ratings connected to any stab is limited to 150A maximum on the 100 and 125A loadcenters, and 200A on loadcenters with 150A or higher main bus. NEMA Type 1 boxes or enclosures are manufactured from galvanized steel. Raintight boxes are manufactured from galvanized steel, then finished using an electrostatic powder coat, baked urethane paint process.

Neutrals

Eaton Type CH loadcenters feature two types of neutrals:

Insulated/Bondable Split Neutral

Panels are supplied with split insulated neutrals with an insulated cross strap. For service entrance applications, the neutral must be bonded by using the bonding strap supplied with the panel. For non-service entrance (sub-panel) applications, the panel may be installed with the bonding strap not connected to the neutral. Separate ground bars must be used on non-service entrance panels.

Insulated/Bondable Single Neutral

Panels are supplied with a single insulated neutral. For service entrance applications, all that is required to bond the neutral is to loosen the bonding screw and the neutral screw directly beside it, insert the bonding strap into the neutral bar, and re-tighten both connections. The single neutral can be moved by the contractor to the other side of the panel, if desired. When used as a service entrance panel, unused neutral connections may be used for the termination of equipment grounds. For non-service entrance (sub-panel) applications, the panel may be installed with the bonding strap not connected to the neutral. Separate ground bars must be used on non-service entrance panels.

Grounds

In service entrance applications where the neutral is bonded, unused neutral holes may be used for terminating ground conductors. In sub-feed panels, the neutral must be isolated (non-bonded), and ground wires must be terminated on a separate ground bar.

The insulated/bondable single/split neutral panels have sufficient terminations for both ground and neutral conductors. The insulated/bondable single split neutral panels are supplied with a separate factory-installed ground bar if the catalog number contains a "G." If not, a separate ground bar should be installed. Insulated/Bondable Single Neutral panels are supplied without a ground bar (unless otherwise noted), and ground bar kits if needed must be purchased separately.

Neutral and Ground Terminals

The standard terminals on grounds and neutrals are rated to accept (3) #14–#10 Cu/Al or (1) #14–4, provided the cables terminated are of the same material. For larger cables, add-on neutral lugs may be ordered from the accessories on **Page V1-T1-63**.

Note: NEC allows only one current-carrying conductor per hole on neutrals unless otherwise noted.

Bottom Fed Loadcenters

For single-phase 225A and below loadcenters that are bottom fed, a standard panel can be rotated 180 degrees to allow straight-in wiring of power cables to the main terminals. Because the main circuit breaker handle operates horizontally, the orientation of the main circuit breaker handle is consistent with the requirements of NEC 2008 Article 240.81.

Gutter Splicing

Loadcenters are not UL listed as wiring troughs. Therefore, gutter splicing of riser cables to tap off to the main device is not permitted. Refer to NEC 2008 Article 312.8.

Fire Rating

Due to the numerous openings in both loadcenter boxes and trims, they should not be mounted in firewalls. There is no approved method for sealing the enclosures for this application.

Date Code

The date of manufacture of each loadcenter is printed on the outside of the carton as well as inside the loadcenter. On the carton, the date code is printed on the end carton label. In the loadcenter, the date code is located on the small white label located on the right side wall (with the main device on top).

The date code is in the following format: F ### &. The "F" is the numeric code for the Lincoln, IL plant, and the three numbers are the year and week of manufacturing, e.g., 023. The "1" sign at the end signifies the decade of the 2010. Therefore, the date code F023& would indicate that the product was manufactured in the 23rd week of 2010. The 1980s are represented by the "+" sign and the 1990s are represented by a "=" at the end of the code.

Surge Protectors

Complete home surge protection is available in multiple options, including a factory-installed option that provides the highest level of surge protection in a residential design. See Tab 3 for more details.

Circuit Breaker Case Interrupting Capacity

- 10 kAIC
- 22 kAIC
- 25 kAIC

Warranty Information

- 10-year limited loadcenter warranty
- 10-year limited branch breaker warranty

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Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

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Type BR Loadcenter—BR4040B200

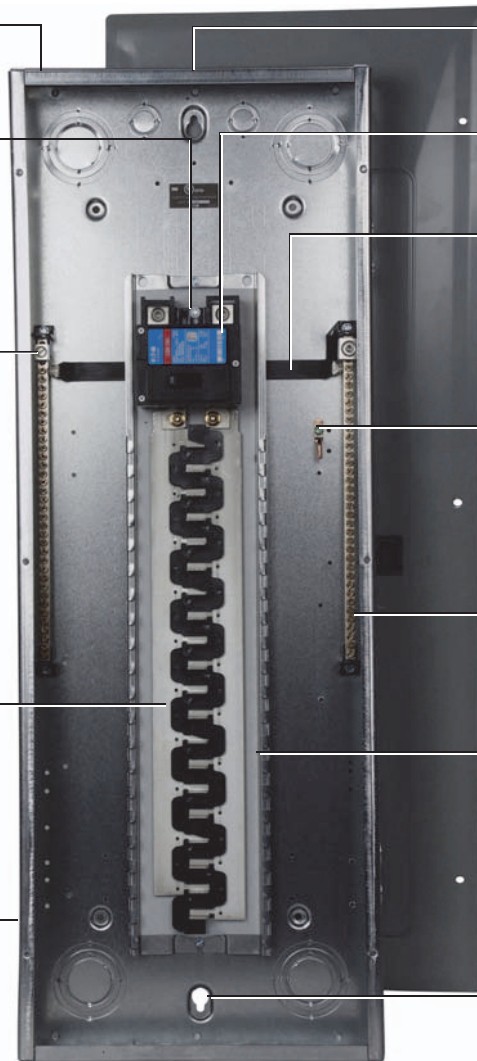
Extra 1.5-Inch (38.1 mm) Knockout
■ Larger knockout provides easier installation and time savings

Top or Bottom Feed
■ Straight-in wiring saves labor and material
■ One panel for either top or bottom applications

2/O Lug
■ Easily removable and can be installed in any location on the neutral bar

Standard Tin-Plated Aluminum Bus
■ Excellent conductivity and corrosion resistance
■ Copper bus options are available for select catalog numbers

Drywall Marking on Enclosure
■ Indicates proper mounting depth for flush applications



“Tangential” Center Knockout
■ Easier installation for conduit applications

Commercial Grade Main Breaker
■ 25 kAIC series rated main breaker for superior protection

Neutral Bus (Strap)
■ Is easily removable for sub-panel applications

Bonding Z-strap
■ Provides easy field conversion for service entrance applications

Split Neutral Bars
■ A minimum of 150% neutral capacity

Steel Backpan
■ Provides solid and reliable breaker mounting—single piece design for stability and durability

Single Keyhole Mounting
■ One keyhole at the top and bottom provides easier mounting and leveling

Warranty

10-year warranty on all Type BR loadcenters and circuit breakers.

Standards and Certifications

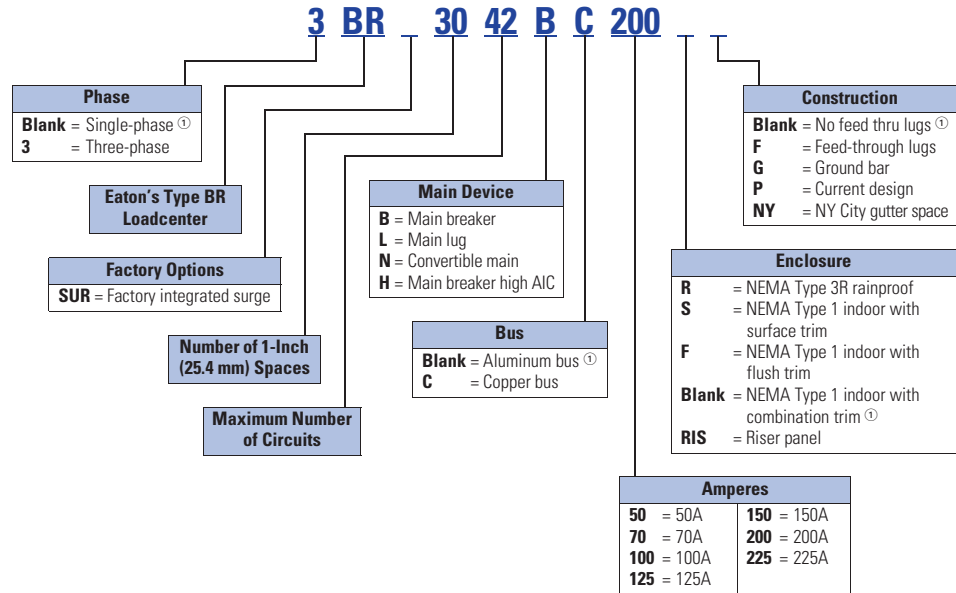
UL Listings

All Eaton Type BR loadcenters are listed under UL File E52977 except the 2–8 circuit loadcenters, up through and including 125A, which are listed under UL File E8741.

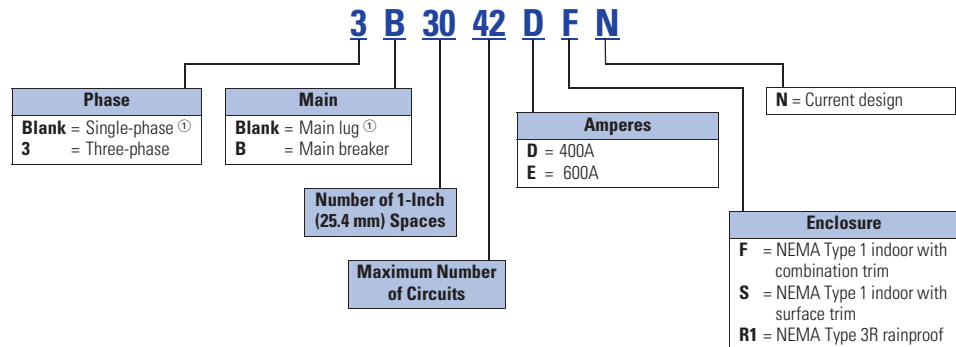


Catalog Number Selection

Single- and Three-Phase Through 225A



Single- and Three-Phase 400–600A



Example No. 1: BR1224L125G

Single-phase Type BR loadcenter rated at 125A with main lugs, 12 spaces allowing 24 poles, indoor combination enclosure, aluminum bus and ground bar.

Example No. 2: BR24L70RP

Single-phase Type BR loadcenter rated at 70A with main lugs, two spaces allowing four poles, rainproof enclosure with aluminum bus.

Example No. 3: 3B4242EFN

Three-phase Type BR loadcenter rated at 600A with main breaker, 42 spaces allowing 42 poles, indoor combination enclosure.

Note

① No character space used.

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Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

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Product Selection

Single-Phase—Main Circuit Breaker Loadcenters—10/25 kAIC

BR4040B200



Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number with Combination ^① or NEMA Type 3R Cover	
		Spaces	Circuits					
BR 10 kAIC	100	8	16	Indoor	B1	#4–1/0 ^②	BR816B100	
		10	20	Indoor	A1		BR1020B100S11	
		10	20	Indoor	A1		BR1020B100F11	
		10	20	Outdoor	B2R		BR1020B100RF ^{③④}	
		12	12	Indoor	B2		BR1212B100	
		12	20	Indoor	B2		BR1220B100	
		12	24	Outdoor	B2R		BR1224B100R ^④	
		16	16	Indoor	C1		BR1616B100	
		16	20	Indoor	C1		BR1620B100	
		16	24	Outdoor	C1R		BR1624B100R ^④	
	20	24	Outdoor	C3R	BR2024B100R ^④			
	20	20	Indoor	C2	BR2020B100			
	16	24	Indoor	C1	BR1624B100			
	30	30	Indoor	D1	BR3030B100			
	20	24	Indoor	C1	BR1624B125			
	BRH ^⑤ 22 kAIC	100	20	24	Indoor	C2	#4–1/0	BR2024B125
20			24	Indoor	C1	BR2024B125R ^④		
20			24	Outdoor	C3R	BR2024B125R ^④		
30			30	Indoor	D1	BR3030B125		
CSR ^⑥ 25 kAIC	150	8	16	Outdoor	C3R	#2–300 kcmil	BR816B150RF ^{③④⑤}	
		16	30	Indoor	C4		BR1630B150	
		20	30	Indoor	C4		BR2030B150	
		20	30	Outdoor	D1R		BR2030B150R ^④	
		20	40	Indoor	D1		BR2040B150	
		20	40	Outdoor	D1R		BR2040B150R ^④	
		24	30	Indoor	G1		BR2430B150	
		30	30	Outdoor	G1R		BR3030B150R ^④	
		30	30	Indoor	G1		BR3030B150	
		30	40	Indoor	G1		BR3040B150	
	200	200	4	8	Outdoor	8R	#2–300 kcmil	BR48B200RF ^{③⑧⑨}
			8	16	Outdoor	C3R		BR816B200RF ^{③④}
			16	32	Indoor	C4		BR1632B200
			20	40	Outdoor	D1R		BR2040B200R ^④
20			40	Indoor	D1	BR2040B200		
24			40	Indoor	G1	BR2440B200		
30			40	Outdoor	G1R	BR3040B200R ^④		
30			40	Indoor	G1	BR3040B200 [®]		
40			40	Outdoor	L1R	BR4040B200R ^④		
40			40	Indoor	L1	BR4040B200		
225	225	42	42	Indoor	L2	#1–250 kcmil	BR4050B200	
		42	42	Outdoor	L2R		BR4242B225 BR4242B225R ^④	

Notes

- ① Combination style covers may be used in surface or flush applications.
- ② Wire range size for BR1020B100SP is #6–#1 Cu/Al.
- ③ Includes through-feed lugs for both phase and neutral conductors.
- ④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑤ See copper bus offering, **Page V1-T1-53**.
- ⑥ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFCB 10 kAIC branch breakers are used in series with Type BRH main breaker.
- ⑦ 25 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFCB 10 kAIC branch breakers are used in series with Type CSR main breaker.
- ⑧ Supplied with adapter plate to use DS Group1 hubs on **Page V1-T1-63**. If 2.50-inch (63.5 mm) hub is needed, remove adapter and use ARP0007CH25 hub.
- ⑨ Neutral is bonded—suitable for service entrance only—cannot be converted for sub-feed application.
- ® Add G to the end of the catalog number for factory-installed GBK2120 ground bar.

All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with neutral bonding strap preattached. The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment. Ground bar kits priced separately. See **Page V1-T1-63**.

Main Circuit Breaker Loadcenters—10/22 kAIC

B4242DFN



Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Commercial Loadcenter Catalog Number ^{①②③}	
		Spaces	Circuits				With Flush or NEMA Type 3R Cover	With Surface Cover
DK ^④	300	42	42	Indoor	24	(2) #3/0–250 kcmil	BR304242F	BR304242S
	400	42	42	Indoor	24	(2) #3/0–250 kcmil	B4242DFN	B4242DSN
		42	42	Outdoor	47	(2) #3/0–250 kcmil	B4242DR1N ^⑤	—
HLD ^⑥	600	42	42	Indoor	24	(2) #3/0–500 kcmil	B4242EFN	B4242ESN

Notes

- ① Ground bar kits priced separately. See **Page V1-T1-63**.
- ② The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment.
- ③ Door lock and key included with loadcenter.
- ④ Type DK main circuit breaker is rated 65 kAIC at 240 Vac and allows a 22 kAIC series rating on the panel when Types BR, BD and BJ branch circuit breakers are used.
- ⑤ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑥ Type HLD main circuit breaker is rated 65 kAIC at 240 Vac. Type HLD circuit breaker **is not** series rated with Types BR, BD and BJ branch circuit breakers.

Box sizes **Pages V1-T1-64** through **V1-T1-67**.

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Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

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Single-Phase—Main Lug Loadcenters

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Trim Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number					
	Spaces	Circuits										
70	Surface	Outdoor	Indoor	Surface (no door)	5	#8-#2	BR24L70SP ^{①②}					
			Indoor	Surface (no door)	5		BR24L70SGP ^{②③}					
	Outdoor	—	5R	BR24L70RP ^{①②④}								
	Indoor	Flush (no door)	5	BR24L70FP ^{①②}								
	Indoor	Flush (no door)	5	BR24L70FGP ^{②⑤}								
125	Flush	Outdoor	Indoor	Surface (no door)	6	#14-1/0	BR24L125SP ^{①②}					
			Outdoor	—	6R		BR24L125RP ^{①②④}					
			Outdoor	—	6R		BR24L125RSEP ^{②⑦⑧}					
			Outdoor	—	6R		BR24L125RSE2P ^{②⑥⑦}					
	Surface (No Door)	Indoor	Indoor	Indoor	Flush (no door)	6	#14-1/0	BR24L125FP ^{①②}				
				Indoor	Surface (no door)	7		BR48L125SP ^{①⑨}				
				Indoor	Surface (no door)	7		BR48L125SGP ^{③⑨}				
				Outdoor	—	7R		BR48L125RP ^{①④⑨}				
				Indoor	Flush (no door)	7		BR48L125FP ^{①⑨}				
				Indoor	Flush (with door)	7		BR48L125FDP ^{①⑨}				
				Indoor	Flush (no door)	7		BR48L125FGP ^{③⑨}				
				Flush (No Door)	Indoor	Indoor		Indoor	Surface (no door)	7	#14-#1	BR612L125SP ^{①⑩}
								Indoor	Surface (no door)	7		BR612L125SGP ^{⑩⑪}
								Indoor	Surface (with door)	7		BR612L125SDP ^{①⑩}
								Indoor	Surface (with door)	7		BR612L125SDGP ^{⑩⑪}
								Outdoor	—	7R		BR612L125RP ^{①④⑩}
	Indoor	Flush (no door)	7				BR612L125FP ^{①⑩}					
	Indoor	Flush (no door)	7				BR612L125FGP ^{⑤⑩⑪}					
	Indoor	Flush (with door)	7				BR612L125FDP ^⑩					
	Outdoor	Indoor	Indoor	Indoor	Flush (with door)	7	#14-#1	BR612L125FDGP ^{⑤⑩⑪}				
Indoor				Surface (no door)	7	BR816L125SP ^{①⑩}						
Indoor				Surface (no door)	7	BR816L125SGP ^{⑩⑫}						
Indoor				Surface (with door)	7	BR816L125SDP ^{①⑩}						
Indoor				Surface (with door)	7	BR816L125SDGP ^{⑩⑫}						
Outdoor				—	7R	BR816L125RP ^{①④⑩}						
Indoor				Flush (no door)	7	BR816L125FP ^{①⑩}						
Indoor				Flush (no door)	7	BR816L125FGP ^{⑤⑩⑫}						
Indoor				Flush (with door)	7	BR816L125FDP ^{①⑩}						
Indoor				Flush (with door)	7	BR816L125FDGP ^{⑤⑩⑫}						




Notes

- ① Ground bar kits priced separately. See **Page V1-T1-63**.
 - For 2/4 circuit loadcenters, use GBK5 or GBK520 ground bar.
 - For 4/8, 6/12 and 8/16 circuit loadcenters, use GBK10 ground bar.
 - Ground bars mount to the left side wall of the enclosure for the 4/8, 6/12 and 8/16 circuit loadcenters.
- ② Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ③ Ground bar GBK5 is installed.
- ④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑤ CSA and UL approved.
- ⑥ Neutral/ground holes (6) #14-6 and (3) #14-2/0 AWG Cu/Al.
- ⑦ For use as service entrance applications only.
- ⑧ Neutral/ground holes (6) #14-6 and (3) #14-1/0 AWG Cu/Al.
- ⑨ Suitable for use as service equipment when not more than two service disconnecting mains are provided or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ⑩ Suitable for use as service equipment when a main breaker is used or when not more than six service disconnecting mains are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ⑪ Ground bar GBK10 is installed.
- ⑫ Ground bar GBK14 is installed.

Box sizes **Pages V1-T1-64** through **V1-T1-67**.

Single-Phase—Main Lug Loadcenters

Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral, continued

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number with Combination or NEMA Type 3R Cover ^①	
	Spaces	Circuits					
BR1224L125 	125	12	12	Indoor	B1	#6–2/0	BR1212L125 ^{②③④⑤}
		12	24	Indoor	B1		BR1224L125 ^{②④⑤}
		12	24	Indoor	B1		BR1224L125G ^{②④⑤}
		12	24	Indoor	B1		BR1224L125DG ^{②④⑤⑥}
		12	24	Outdoor	B1R		BR1224L125R ^{②⑤⑦}
		16	16	Indoor	B2		BR1616L125 ^{②④⑤}
		16	24	Indoor	B2		BR1624L125 ^{②④}
		16	24	Indoor	B2		BR1624L125G ^{②④}
		16	24	Outdoor	B2R		BR1624L125R ^{②⑦}
		20	20	Indoor	C1		BR2020L125 ^{②④⑤}
		20	24	Indoor	C1		BR2024L125 ^{②④}
		20	24	Indoor	C1		BR2024L125G ^{②④⑧}
		20	24	Outdoor	C1R		BR2024L125R ^{②⑦}
		24	24	Indoor	C2		BR2424L125 ^{②④}
		24	24	Indoor	C2		BR2424L125G ^{②④⑧}
		30	42	Indoor	D1		BR3042L125 ^{②④}
BR1224L200 	150	16	30	Indoor	C2	#1–300 kcmil	BR1630L150 ^{④⑨}
		20	30	Indoor	C2		BR2030L150 ^{④⑨}
BR1224L200 	200	8	16	Outdoor	B2R	#1–300 kcmil	BR816L200RF ^{⑤⑦⑧}
		12	24	Indoor	B2		BR1224L200 ^{④⑤⑨}
		12	24	Outdoor	B2R		BR1224L200R ^{⑤⑦⑨}
		20	40	Indoor	C2		BR2040L200 ^{④⑨}
		20	40	Indoor	C2		BR2040L200G ^{④⑧⑨}
		20	40	Outdoor	C3R		BR2040L200R ^{⑦⑨}
		24	40	Indoor	C4		BR2440L200 ^{④⑨}
		30	40	Indoor	D1		BR3040L200 ^{④⑨}
		30	40	Indoor	D1		BR3040L200G ^{④⑧⑨}
		30	40	Outdoor	D1R		BR3040L200R ^{⑦⑨}
		40	40	Indoor	G1		BR4040L200 ^{④⑨}
		40	40	Indoor	G1		BR4040L200G ^{④⑨}
		40	40	Outdoor	G1R		BR4040L200R ^{⑦⑨}
		225	42	42	Indoor	L1	
42	42		Outdoor	L1R			BR4242L225R ^⑦

Notes

- ① Ground bar kits priced separately unless otherwise noted. See **Page V1-T1-63**.
- ② Has notch for BREQS125 hold-down kit.
- ③ Single, movable neutral is provided.
- ④ Combination cover style.
- ⑤ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ⑥ Ground bars GBK5 and GBK520 installed.
- ⑦ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑧ Ground bar GBK1220 installed.
- ⑨ Has notch for BRHDK125 hold-down kit.
- ⑩ Includes through-feed lugs for both phase and neutral conductors.

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1

Single-Phase—Main Lug Loadcenters—400 and 600A

4242DFN



Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Commercial Loadcenter Catalog Number ^{①②③}	
	Spaces	Circuits				With Flush or NEMA Type 3R Cover	With Surface Cover
400	12	24	Indoor	19	(1) #4/0–750 kcmil or (2) #3/0–400 kcmil	—	1224DSN ^⑤
	12	24	Outdoor	42		1224DR1N ^{④⑤}	—
	24	42	Indoor	20	—	2442DSN	
	42	42	Indoor	22	4242DFN	4242DSN	
	42	42	Outdoor	46	4242DR1N ^④	—	
600	42	42	Indoor	22	(2) #2–500 kcmil	—	4242ESN

Notes

- ① Ground bar kits priced separately unless otherwise noted. See **Page V1-T1-63**.
- ② Has notch for BRHDK125 hold-down kit.
- ③ Ground bar GBK8 installed.
- ④ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑤ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).

Convertible Loadcenters MCB or MLO—Base Units and Main Devices 10/22/25 kAIC, Complete Assembly Consists of: Loadcenter and Either Main Breaker Kit or Main Lug Kit

Note: Interrupting rating depends on main circuit breaker selected.

BR3040N200



Base Units—Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Main Ampere Rating ①	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main	Loadcenter Catalog Number With Combination or NEMA Type 3R Cover ②③
	Spaces	Circuits				
125 ④	12	24	Indoor	B2	See main breaker and main lug kit tables Page V1-T1-54.	BR1224N125 ⑤⑥
	12	24	Outdoor	B2R		BR1224N125R ⑤⑥⑦
	16	24	Indoor	C1		BR1624N125 ⑤
	16	24	Outdoor	C1R		BR1624N125R ⑤⑦
	20	24	Indoor	C2		BR2024N125 ⑤
	20	24	Outdoor	C3R		BR2024N125R ⑤⑦
200 ⑥	8	16	Outdoor	C3R	BR816N200RF ⑦⑧⑩⑪	
	12	24	Indoor	C4	BR1224N200 ⑧	
	12	24	Outdoor	C3R	BR1224N200R ⑦⑩	
	16	32	Indoor	C4	BR1632N200 ⑧	
	20	40	Indoor	D1	BR2040N200 ⑧	
	20	40	Indoor	D1	BR2040N200G ⑫	
	20	40	Outdoor	D1R	BR2040N200R ⑦⑩	
	20	40	Outdoor	D1R	BR2040N200RG ⑫	
	24	40	Indoor	G1	BR2440N200 ⑦⑩	
	30	40	Indoor	G1	BR3040N200 ⑧	
	30	40	Indoor	G1	BR3040N200G ⑫	
	30	40	Outdoor	G1R	BR3040N200R ⑦⑩	
	30	40	Outdoor	G1R	BR3040N200RG ⑫	
	40	40	Indoor	L1	BR4040N200 ⑧	
	40	40	Indoor	L1	BR4040N200G ⑫	
	40	40	Outdoor	L1R	BR4040N200R ⑦⑩	
40	40	Outdoor	L1R	BR4040N200RG ⑫		

Notes

- ① The maximum rating of the loadcenter is the main circuit breaker rating when used as service entrance equipment.
- ② 100, 125 and 200A convertible base unit catalog numbers include interior, box and cover only. Main devices and accessories must be ordered separately for field installation. All convertible base units are listed as suitable for use as service entrance equipment when used per Article 384 of the NEC.
- ③ Ground bar kits priced separately except as noted, refer to **Page V1-T1-63**.
- ④ For main breaker, use Type BR. For main lug use Type BRSL.
- ⑤ BREQS125 hold-down screw comes with loadcenter for back-fed Types BR and BRH main circuit breakers.
- ⑥ Convertible to maximum of 100A main circuit breaker and 125A main lug.
- ⑦ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑧ For main breaker, use Type BW or CSR. For main lug, use Type BRL.
- ⑨ Includes through-feed lugs for both phase and neutral conductors.
- ⑩ No hold-down provisions for back-fed Types BR and BRH main circuit breakers.
- ⑪ Insulated/bondable single neutral.
- ⑫ Includes GBK2120 ground bar.

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1 Convertible Loadcenters MCB or MLO—Base Units and Main Devices 10/22/25 kAIC, Complete Assembly Consists of: Loadcenter and Either Main Breaker Kit or Main Lug Kit

Note: Interrupting rating depends on main circuit breaker selected.

BW2200



Main Devices—Two- and Three-Pole Main Circuit Breakers—120/240 Vac or 208Y/120 Vac or 240 Vac

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	10 kAIC Catalog Number	22/25 kAIC Catalog Number ①
Two-Pole			
100	#4-1/0	BR2100	BRH2100
110	#4-1/0	BR2110	BRH2110
125	#4-2/0	BR2125	BRH2125
125	#2-300 kcmil	BW2125	CSR2125N
150	#2-300 kcmil	BW2150	CSR2150N
175	#2-300 kcmil	BW2175	CSR2175N
200	#2-300 kcmil	BW2200	CSR2200N
Three-Pole			
100	#1	BR3100	BRH3100

BRL200



Main Devices—Two- and Three-Pole Main Lug Kits—120/240 Vac or 208Y/120 Vac or 240 Vac

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
Two-Pole		
125	#6-2/0	BRSF125
150	#1-300 kcmil	BRL200
175	#1-300 kcmil	BRL200
200	#1-300 kcmil	BRL200
Three-Pole		
150	#6-3/0	3BRSF150

Main Circuit Breaker with Accessory

Example: BW22005R01 (Put description with catalog number on order. See Page V1-T1-83.)

Main Circuit Breaker Loadcenters—Copper Bus 10/22/25 kAIC

BR3030BC100



Main Circuit Breaker Loadcenters—With Copper Bus—Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number with Combination Cover ②③
		Spaces	Circuits				
BR 10 kAIC	100	20	20	Indoor	C2	#4-1/0	BR2020BC100
		30	30	Indoor	D1	#4-1/0	BR3030BC100
BRH 22 kAIC ④	100	30	30	Indoor	D1	#4-1/0	BR3030HC100
CSR 25 kAIC	150	30	30	Indoor	G1	#2-300 kcmil	BR3030BC150
		200	20	40	Indoor	D1	#2-300 kcmil
	200	30	40	Indoor	G1	#2-300 kcmil	BR3040BC200
		40	40	Indoor	L1	#2-300 kcmil	BR4040BC200

Main Lug Only Loadcenters—Copper Bus

BR816LC125FDP



Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Single Neutral with Copper Bus

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Trim Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number
	Spaces	Circuits					
125	8	16	Indoor	Surface (with door)	7	#14-1	BR816LC125SDP
	8	16	Indoor	Flush (with door)	7		BR816LC125FDP

Notes

- ① Series combination rating with Types BD, BR, BQ, BQC and GFCB is 22 kAIC with BRH main and 25 kAIC with CSR main.
- ② All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with neutral bonding strap preattached. The maximum rating of the panel is the main circuit breaker rating when used as service entrance equipment.
- ③ Ground bar kits priced separately. See Page V1-T1-63.
- ④ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFCB 10 kAIC branch breakers are used in series with Type BRH main breaker.

Box sizes Pages V1-T1-64 through V1-T1-67.

Convertible Loadcenters—Copper Bus 10/22/25 kAIC

BR3040NC200



Convertible—Single-Phase Three-Wire—120/240 Vac—Insulated/Bondable Split Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main	Loadcenter Catalog Number with Combination or NEMA Type 3R Cover ^{①②③}
	Spaces	Circuits				
125 10/22 kAIC ^{④⑤}	12	24	Indoor	B2	See main breaker and main lug kit tables on Page V1-T1-54 .	BR1224NC125 ^{⑥⑦}
	12	24	Outdoor	B2R		BR1224NC125R ^{⑥⑦⑧}
	20	24	Indoor	C2		BR2024NC125 ^⑦
	20	24	Outdoor	C3R		BR2024NC125R ^{⑦⑧}
200 10/25 kAIC ^{④⑤}	20	40	Indoor	D1	BR2040NC200	
	20	40	Outdoor	D1R	BR2040NC200R ^⑧	
	30	40	Indoor	G1	BR3040NC200	
	30	40	Outdoor	G1R	BR3040NC200R ^⑧	
	40	40	Indoor	L1	BR4040NC200	
	40	40	Outdoor	L1R	BR4040NC200R ^⑧	

Notes

- ① 100, 125 and 200A convertible base unit catalog numbers include interior, box and cover only. Main devices and accessories must be ordered separately for field installation. All convertible base units are listed as suitable for use as service entrance equipment when used per Article 384 of the NEC.
- ② Ground bar kits priced separately, refer to **Page V1-T1-63**.
- ③ All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with a neutral bonding strap preattached. The maximum main rating of the loadcenter is the main breaker rating when used as service entrance equipment.
- ④ Interrupting rating depends on main circuit breaker selected. See **Page V1-T1-63** for mains.
- ⑤ For main breaker, use Type BW or CSR. For main lug, use Type BRL.
- ⑥ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑦ Hold-down screw BREQS125 comes with loadcenter for back-fed Types BR and BRH main circuit breakers.
- ⑧ For main breaker, use Type BR. For main lug, use Type BRSF.
- ⑨ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard. (see Article 408.34 of the NEC).

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1

Three-Phase—Main Circuit Breaker Loadcenters

3BR4242B200



Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number ^{①②} (With Combination or NEMA Type 3R Cover)	
		Spaces	Circuits					
BR 10 kAIC	100	12	24	Indoor	C1	#4–1/0	3BR1224B100	
		12	24	Outdoor	C1R		3BR1224B100R ^③	
CC 10 kAIC	150	30	42	Indoor	L1	#1–3/0	3BR3042B150	
		30	42	Outdoor	L1R		3BR3042B150R ^③	
	200	30	42	Indoor	L1	#1–250 kcmil	3BR3042B200	
		30	42	Outdoor	L1R		3BR3042B200R ^③	
		42	42	Indoor	L2		3BR4242B200	
		42	42	Outdoor	L2R		3BR4242B200R ^③	
225	42	42	Indoor	L2	#1–300 kcmil	3BR4242B225		
	42	42	Outdoor	L2R		3BR4242B225R ^③		
DK ^④ 22 kAIC	400	42	42	Indoor	24	(2) #3/0–250 kcmil	3B4242DFN	
		42	42	Outdoor	47		3B4242DR1N ^③	
LD ^⑤	600	42	42	Indoor	24	(2) #3/0–500 kcmil	3B4242EFN	

Three-Phase—High Interrupting Rated Main Circuit Breaker Loadcenters—22/100 kAIC

3BR4242H200



Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number ^{②⑥} (With Combination Cover With Surface Cover)	
		Spaces	Poles					
BRH 22 kAIC ^⑦	100	12	24	Indoor	C1	#4–1/0	3BR1224H100	3BR1224H100S
CHH 100 kAIC ^⑧	150	30	42	Indoor	L1	#1–250 kcmil	3BR3042H150	3BR3042H150S
CHH 100 kAIC ^⑧	200	30	42	Indoor	L1	#1–250 kcmil	3BR3042H200	3BR3042H200S
		42	42	Indoor	L2		3BR4242H200	3BR4242H200S

Notes

- ① All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with a neutral bonding strap pre-attached (commercial loadcenters do not have a pre-attached bonding strip). The maximum main rating of the panel is the main circuit breaker rating when used as service entrance equipment.
- ② Ground bar kits priced separately. See **Page V1-T1-63**.
- ③ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ④ Type DK main circuit breaker is rated 65 kAIC at 240 Vac and allows a 22 kAIC series rating on the loadcenter when Types BR, BD and BJ branch circuit breakers are used.
- ⑤ The LD main circuit breaker is rated 65 kAIC at 240 Vac. Type LD circuit breaker **is not** series rated with Types BR, BD and BJ branch circuit breakers.
- ⑥ All main circuit breaker loadcenters are listed for use as service entrance equipment and are shipped with a neutral bonding strap pre-attached.
- ⑦ 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFGB branch breakers are used with BRH main.
- ⑧ 100 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFGB branch breakers are used with CHH main.

Box sizes **Pages V1-T1-64** through **V1-T1-67**.

Three-Phase—Main Lug Loadcenters

3BR1224L125



Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral (Unless Otherwise Noted)

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number ^① (With Combination or NEMA Type 3R Cover)
	Spaces	Circuits				
100	3	3	Indoor	9	#14–1/0	3BR3L100S ^{②③}
	3	3	Outdoor	9R		3BR3L100R ^{③④}
125	12	24	Indoor	C1	#6–2/0	3BR1224L125 ^{⑤⑥}
	12	24	Outdoor	C1R		3BR1224L125R ^{④⑤⑥}
150	24	42	Indoor	D1	#1–300 kcmil	3BR2442L150
	24	42	Outdoor	D1R		3BR2442L150R ^④
200	12	24	Indoor	C4	#1–300 kcmil	3BR1224L200 ^⑥
	12	24	Outdoor	C3R		3BR1224L200R ^{④⑥}
	30	42	Indoor	G1		3BR3042L200
	30	42	Outdoor	G1R		3BR3042L200R ^④
	42	42	Indoor	L1		3BR4242L200
	42	42	Outdoor	L1R		3BR4242L200R ^④
225	42	42	Indoor	L1	#1–300 kcmil	3BR4242L225
	42	42	Outdoor	L1R		3BR4242L225R ^④

3424DFN



Three-Phase, Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Commercial Loadcenter Catalog Number ^②	
	Spaces	Circuits				With Flush or NEMA Type 3R Cover	With Surface Cover
400	42	42	Indoor	22	(1) 250–750 kcmil or (2) #3/0–250 kcmil	3424DFN	3424DSN
	42	42	Outdoor	46		3424DR1N ^④	—
600	42	42	Indoor	22	(2) #2–500 kcmil	—	3424ESN

Three-Phase Convertible Loadcenters MCB or MLO–Base Units and Main Devices 10/22 kAIC

3BR3030N100



Convertible Loadcenters—Three-Phase Four-Wire—208Y/120 Vac or 240 Vac Insulated/Bondable Split Neutral

Main Ampere Rating ^⑤	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main	Loadcenter Catalog Number ^{①⑥} (With Combination or NEMA Type 3R Cover)
	Spaces	Circuits				
100 ^⑦	30	30	Indoor	D1	See main breaker and main lug kit tables on Page V1-T1-54 .	3BR3030N100 ^⑧
	30	30	Outdoor	D1R		3BR3030N100R ^{④⑩}
125 ^⑦	12	24	Indoor	C1		3BR1224N125 ^{④⑩⑫}
	12	24	Outdoor	C1R		3BR1224N125R ^{④⑥⑩⑫}

Notes

- ① Ground bar kits priced separately. See **Page V1-T1-63**.
- ② Surface cover only.
- ③ Insulated/bondable single neutral.
- ④ Rainproof loadcenters are furnished with hub closure plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑤ Has notch for BREQS125 hold-down kit.
- ⑥ Suitable for use as service equipment when not more than six main disconnecting means are provided and when not used as a lighting and appliance panelboard (see Article 408.34 of the NEC).
- ⑦ Door lock and key included with loadcenter.
- ⑧ The maximum rating of the loadcenter is the main circuit breaker rating when used as service entrance equipment.
- ⑨ 100, 125 and 200A convertible base unit catalog numbers include interior, box and cover only. Main devices and accessories must be ordered separately for field installation. All convertible base units are listed as suitable for use as service entrance equipment when used per Article 384 of the NEC.
- ⑩ For main breaker, use Type BR. For main lug, use Type BR5F.
- ⑪ BREQS125 hold-down screw comes with loadcenter for back-fed Types BR and BRH main circuit breakers.
- ⑫ Convertible to maximum of 100A main circuit breaker and 125A main lug.

Box sizes **Pages V1-T1-64** through **V1-T1-67**.

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1 Commercial Loadcenters—Indoor Enclosures Main Circuit Breaker, Main Lug and Convertible, New York City Approved Single-Phase and Three-Phase

BR4242B200NY
With 3BR42FTNY
Cover Installed



Single-Phase Main Circuit Breaker—Factory Installed

Main Breaker Type	Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	
		Spaces	Circuits					Flush	Surface
Single-Phase Three-Wire—120/240 Vac Insulated/Bondable Neutral									
CC 10 kAIC	200	42	42	Indoor	A	#1–300 kcmil	BR4242B200NY	3BR42FTNY	3BR42STNY

BR4242L225NY
With 3BR42FTNY
Cover Installed



Single-Phase Main Lugs—Factory Installed

Main Lug Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	
	Spaces	Circuits					Flush	Surface
Single-Phase Three-Wire—120/240 Vac Insulated/Bondable Neutral								
225	42	42	Indoor	A	#1–300 kcmil	BR4242L225NY	3BR42FTNY	3BR42STNY

3BR4242N225NY



Three-Phase Convertible Loadcenters

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Breaker	Loadcenter Catalog Number	Loadcenter Cover Catalog Number	
	Spaces	Circuits					Flush	Surface
Three-Phase Four-Wire—120/240 Vac Insulated/Bondable Neutral								
225	42	42	Indoor	B	#1–300 kcmil	3BR4242N225NY	3BR42FTNY	3BR42STNY

Three-Phase Main Breaker Kits

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Main Breaker Kit 10 kAIC
150	#4–4/0	CC3150N
175	#2/0–300 kcmil	CC3175N
200		CC3200N
225		CC3225N

Three-Phase Main Lugs Kit

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Main Lugs Kit
225	#2/0–300 kcmil	3BRL225

Spa Panels



Contents—BR Specialty Products

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BR Specialty Products	
Spa Panels	
Riser Panel	V1-T1-58
Type BR Renovation Loadcenter	V1-T1-59
Type BR Retrofit Interior Kits	V1-T1-70
BR Circuit Breakers	V1-T1-72

BR Specialty Products

Spa Panels

Product Description

Eaton’s BR Spa Panels distribute power to outdoor loads and provide protection for people from electric shock. Save time and money with streamlined installation procedures and easy-access features. Spa panels meet NEC requirements by providing a ground fault circuit interruption device and a disconnect switch in a single simple device. Ships assembled prewired, factory tested and ready to install.

Features

- 10-year warranty
- UL Listed
- Factory-installed two-pole ground fault circuit interrupter (GFCI)

Product Selection

BR Spa Panel



Spa Panel—Meets NEC Article 680.40 Through 680.43—Requirements for GFCI Protection

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm) Space	Poles	Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
40	—	—	Outdoor	5R	#8-#2	BR40SPA ①
50	—	—	Outdoor	5R	#8-#2	BR50SPA ②

Notes

- ① Includes a GFCB240 breaker, factory installed.
- ② Includes a GFCB250 breaker, factory installed.

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Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

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Riser Panel



Contents—BR Specialty Products

<i>Description</i>	<i>Page</i>
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BR Specialty Products	
Spa Panels.	V1-T1-57
Riser Panel	
Type BR Retrofit Interior Kits.	V1-T1-70
Type BR Renovation Loadcenter	V1-T1-59
BR Circuit Breakers	V1-T1-72

Riser Panel

Product Description

Eaton's Riser Panel is a loadcenter with an offset interior to allow riser cables to pass through the enlarged gutter. By using lay-in tap lugs, the contractor is able to simply strip off a length of the riser cable's insulation, and tap off to the riser panel's main lugs. These panels are used in the construction of assisted living homes, dormitories, public housing complexes and apartments.

Product Selection

BR1224L125RIS



Riser Panel

Main Ampere Rating	Maximum Number 1-Inch (25.4 mm)		Enclosure Type	Box Size	Wire Size Range Cu/Al 60°C or 75°C for Main Lugs	Catalog Number
	Space	Circuits				
125	12	24	Indoor	C4	#6–2/0	BR1224L125RIS
125	12	24	Indoor	C4	#6–2/0	BR1224L125RISBP ①
125	20	24	Indoor	C4	#6–2/0	BR2024L125RIS
125	20	24	Indoor	C4	#6–2/0	BR2024L125RISBP ①
125	20	30	Indoor	C2	#6–2/0	BR2030L125RIS
200	30	40	Indoor	D1	#1–300	BR3040L200RIS

BRGUTTER (Shown with Loadcenter)



Riser Panel Accessories

Catalog Number

BRGUTTER ②

GTAP250

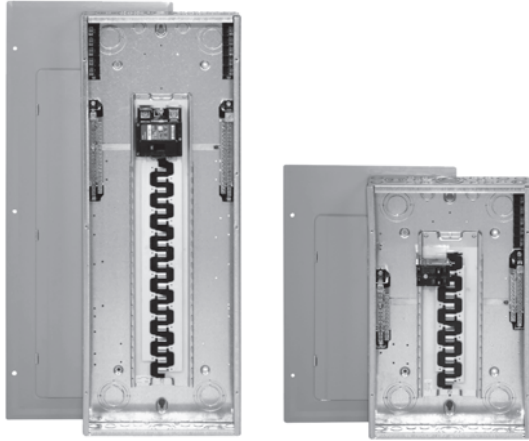
Notes

- ① Bulk-packaged loadcenter without carton. Must be ordered in multiples of 16.
- ② Refer to **Page V1-T1-65** for dimensions. BRGUTTER is box size C2.

Accessories

For riser panels not shown, contact the Flex Center at 1-800-330-6479 for both CH and BR riser panels.

BR Renovation Loadcenters



Contents—BR Specialty Products

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BR Specialty Products	
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Riser Panel	V1-T1-58
Type BR Retrofit Interior Kits	V1-T1-70
Type BR Renovation Loadcenter	
Options and Accessories	V1-T1-60
BR Circuit Breakers	V1-T1-72

Type BR Renovation Loadcenter

Product Description

- Available in 10, 20, 30 and 40 circuit main breaker styles
- Designed to replace existing loadcenters and fuse boxes
- Type BR loadcenter packaged with circuit breakers
- Factory-installed 5-circuit terminal block(s)
- Twin-stacked neutral design



Quick-ProSM

All you need to know to save time and make more money.

Specified on certain Eaton products, the Quick-Pro symbol allows for immediate recognition of products that are designed for straightforward installation. When you see Quick-Pro, you know you can install quickly—sometimes up to 50% less than the usual installation time—and move on to your next job.

Features, Benefits and Functions

- Factory-installed terminal block(s) allows installer to terminate existing short wires without using wire nuts or junction boxes
- Twin-stacked neutrals are mounted up high in the loadcenter, which allows for all neutral and ground wires to be terminated in the top half of the loadcenter
- Specifically designed for the service contractor—this is the ONLY renovation line in the industry
- Single-pole and two-pole breakers included
- 10-year warranty on loadcenter and breakers

Product Selection

BR2020B100RN



BR Value Packs ①

Main Breaker Type	Description	Wire Size Range	Number of 5-Circuit Terminal Blocks	Single-Pole Breakers	Two-Pole Breakers	Catalog Number
BR 10 kAIC	Single-phase 100A 10k main breaker 10/20 circuit surface-mount box is 11.75" wide x 13" tall	#6–1/0	0	(2) BR115	(1) BR230	BR1020B100S11RN
	Single-phase 100A 10k main breaker 10/20 circuit flush-mount box is 11.75" wide x 13" tall		0	(2) BR115	(1) BR230	BR1020B100F11RN
	Single-phase 100A 10 kAIC main breaker 20/20 circuit		1	(5) BR120	(1) BR230	BR2020B100RN
CSR 25 kAIC	Single-phase 200A 25 kAIC main breaker 30/40 circuit	#2–300 kcmil	2	(5) BR115 (5) BR120	(1) BR230 (1) BR250	BR3040B200RN
	Single-phase 200A 25 kAIC main breaker 40/40 circuit		2	(6) BR115 (6) BR120	(1) BR230 (1) BR250	BR4040B200RN

Note

① Indoor enclosure type.

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1

Options and Accessories

BRSF125



3BRS225



BRL200



TDL



Field Installation Kits and Parts

Number of Poles	Ampere Rating	Number of 1-Inch (25.4 mm) Spaces Needed	Wire Size Range Cu/Al 60°C or 75°C	Ordering Quantity ^①	Catalog Number
Main and Sub-Feed Lug Blocks					
2	125	2	#8–2/0	1	BRSF125
	150	2	#8–2/0	1	BRSF150 ^②
	225	4	#2–300 kcmil	1	BRS225
3	150	3	#8–2/0	1	3BRSF150 ^②
	225	6	#2–300 kcmil	1	3BRS225
Main Lugs					
Two-pole, 200A stud mounted (includes deadfront filler plate)			#1–300 kcmil	1	BRL200
Neutral/ground lug			#2/0 maximum	1	NL20
Add-on neutral or ground lug			#3/0 maximum	1	NL30
			300 kcmil maximum	1	NL300
Filler Plates					
1-inch (25.4 mm) circuit breaker space				25	BRFP
BW main circuit breaker space (with hardware)				1	BWFP
Door lock—12–42 circuits, and 100–225A				1	TDL
Door lock—4–8 circuits, 125A				1	CH9FL
ANSI-61 light gray touchup paint for current loadcenters				1	SPC61
Isolated neutral assembly (computer circuits)				1	BINA
Circuit directory—adhesive backed				10	TCD
Cover screws				25	LCCS
Cover replacement latch (gray) 14-5/16 (363.5 mm) wide loadcenters only				1	BRRL
Circuit marking strip (next to breaker)				10	BRMS
Circuit identification label (preprinted breaker labels)				25	CHBL
Series rated caution label				25	SRL
Bonding strip with screw				1	BSSUSE

Notes

- ① Must be purchased in multiples of ordering quantities indicated.
- ② #8–2/0 wire size range is 75°C rated only.

Mechanical Interlock Cover

Covers mechanically interlock two breakers—Type BV or CSR main breaker with a Type BR branch breaker.

BR816B100



Mechanical Interlock Cover

Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers	Mechanical Interlock Kit Catalog Numbers
Indoor		
BR816B100	BRCOVC10M	BRMIKBR
BR816N100		
BR1212B100	BRCOVC12M	
BR1220B100		
BR1220H100		
BR1224N125	BRCOVC13M	
BR1616B100	BRCOVC16M	
BR1620B100		
BR1624B100		
BR1624B125	BRCOVC17M	
BR1624N125		
BR2020B100, BR2020BC100 BR2020H100, BR2020HC100	BRCOVC22M	
BR2024H100		
BR2020HC100		
BR2030B100		
BR2040B100		
BR2024B125	BRCOVC23M	
BR2024N125, BR2024NC125		
BR3030B100, BR3030BC100 BR3030H100, BR3030HC100	BRCOVC59M	
Raintight		
BR1020B100R	BR3RDF1M	Field-installed interlock kits not available for these catalog numbers.
BR1224B100R		
BR1224N125R, BR1224NC125R		
BR1624B100R	BR3RDF2M	
BR1624N125R		
BR2024B100R, BR2024B125R	BR3RDF4M	
BR2024N125R, BR2024NC125R		

BR4040B200



Mechanical Interlock Cover, continued

Fits Loadcenter Catalog Numbers	Mechanical Interlock Trim/Deadfront Catalog Numbers	Mechanical Interlock Kit Catalog Numbers
Indoor		
BR1630B150	BRCOV16C4FM	BRMIKCSR
BR1224N200		
BR1632B200		
BR1632N200		
BR2030B150	BRCOV20C4FM	
BR2030H150		
BR2040B150		
BR2040B200, BR2040BC200	BRCOV20D1FM	
BR2040H200		
BR2040N200, BR2040NC200		
BR2430B150, BR2430BC150	BRCOV30G1FM	
BR3030B150		
BR3030H150		
BR3040B150		
BR2440B200		
BR2440N200		
BR3040B200, BR3040BC200		
BR3040N200, BR3040NC200		
BR3040H200		
BR4040B200, BR4040BC200	BRCOV40L1FM	
BR4040H200		
BR4040N200, BR4040NC200		
BR4242B225	BRCOV42L2FM	
Raintight		
BR816B150RF	BR3RDF5M ^①	
BR816B200RF		
BR816N200RF		
BR1224N200R		
BR2030B150R	BR3RDF11M ^①	
BR2040B150R		
BR2040B200R		
BR2040B225R		
BR2040N200R		
BR3030B150R	BR3RDF12M ^①	
BR3040B200R		
BR3040N200R		
BR4040B200R	BR3RDF13M ^①	
BR4040N200R		
BR4242B225R	BR3RDF15M ^①	
Mechanical Interlock Loadcenter Replacement Covers^②		
BR2020B100M, BR2020BC100M	BRCOV20C2FM	Field-installed interlock kits not available for these catalog numbers.
BR2024H100M		
BR3030BC100M	BRCOV30D1FM	

Notes

^① Deadfront only.

^② Can only be provided as replacement covers for factory-installed mechanically interlock loadcenters.

DS300H2



Field Installation Rainproof Conduit Hubs

Description

Group 1—for use with 70, 100 and 125A MLO and MCB loadcenters and circuit breaker enclosures and the following 150 and 200A panels: BR48B200RF

Group 2—for use with 150, 200 and 225A MLO and MCB loadcenters and circuit breaker enclosures except for the following 200A loadcenters: BR48B200RF. Also for use with 400 and 600A loadcenters and New York City loadcenters manufactured after November 1, 2005

Type H conduit hubs for loadcenters PL0724R and S3100RN

Adapter kit—Allows installing a Group 1 hub on devices arranged for Group 2 hubs

Group 1 small blank hub plate with bump

Group 2 Large blank hub plate with bump

Conduit Size Inches (mm)	Ordering Quantity ^①	Catalog Number
0.75 (19.1)	1	DS075H1
1.00 (25.4)	1	DS100H1
1.25 (31.8)	1	DS125H1
1.50 (38.1)	1	DS150H1
2.00 (50.8)	1	DS200H1
2.00 (50.8)	1	DS200H2
2.50 (63.5)	1	DS250H2
3.00 (76.2)	1	DS300H2
0.75 (19.1)	1	RH75P
1.00 (25.4)	1	RH100P
1.25 (31.8)	1	RH125P
1.50 (38.1)	1	RH150P
—	1	DS900AP
—	1	DS900CP1
—	1	DS900CP2

GBK14



BRGBK39512



Ground Bar Kits

Description (See Legend)	Length Inches (mm)	Ordering Quantity ^①	Catalog Number
●○○○○●	2.54 (64.5)	1	GBK5 ^②
●○○○○●■	3.59 (91.2)	1	GBK520 ^②
●○○○○●○○○○	4.29 (109.0)	1	GBK10 ^②
●○○○○●○○○○■	5.34 (135.6)	1	GBK1020 ^②
●○○○○●○○○○○	4.61 (117.1)	1	GBK13 ^②
●○○○○●○○○○○○	5.69 (144.5)	1	GBK14 ^②
●○○○○●○○○○○○■	6.74 (171.2)	1	GBK1420 ^②
●○○○○●○○○○○○○○	8.14 (206.8)	1	GBK21 ^②
●○○○○●○○○○○○○○■	9.19 (233.4)	1	GBK2120 ^②
□□●●□□□□□□●●□□□□□□	5.78 (146.8)	1	BRGBK39512 ^{③④}
○○○○○	1.84 (46.7)	1	GB4NM ^⑤

Ground Bar Legend

- (3) #14–10 Cu/Al or (1) #14–4 Cu/Al
- (1) #6–2/0 Cu/Al
- (1) #14–1/0 Cu/Al or (3) #14–10 Cu/Al
- (1) #14–6 Cu/Al or (2) #14–12 Cu/Al
- Mounting Hole

Notes

- ① Must be purchased in multiples of ordering quantities indicated.
- ② Distance between mounting holes is 1.75 inches (44.5 mm).
- ③ For single- and three-phase 400 and 600A applications.
- ④ Distance between mounting holes is 2.34 inches (59.5 mm).
- ⑤ For non-metallic enclosures. Snaps into molded base.

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Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1

Dimensions

Approximate Dimensions in Inches (mm)

Residential/Commercial/New York City Loadcenters, Unit Enclosures—Box Sizes

Note: Box sizes do not include covers/fronts.

Residential Loadcenters—NEMA Type 1 Indoor

Box Size	Height	Width	Depth
A1	15.00 (381.0)	11.25 (285.8)	3.75 (95.3)
B1	16.75 (425.5)	14.31 (363.5)	3.88 (98.4)
B2	18.75 (476.3)	14.31 (363.5)	3.88 (98.4)
C1	21.00 (533.4)	14.31 (363.5)	3.88 (98.4)
C2	23.00 (584.2)	14.31 (363.5)	3.88 (98.4)
C4	27.00 (685.8)	14.31 (363.5)	3.88 (98.4)
D1	29.13 (739.8)	14.31 (363.5)	3.88 (98.4)
G1	34.13 (866.8)	14.31 (363.5)	3.88 (98.4)
L1	39.00 (990.6)	14.31 (363.5)	3.88 (98.4)
L2	45.00 (1143.0)	14.31 (363.5)	3.88 (98.4)
2	8.63 (219.1)	5.00 (127.0)	3.50 (88.9)
3	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
4	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
5	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
6	12.00 (304.8)	6.88 (174.6)	4.50 (114.3)
7	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
9	14.50 (368.3)	6.50 (165.1)	3.50 (88.9)

Residential Loadcenters—NEMA Type 3R Outdoor

Box Size	Height	Width	Depth
B1R	16.75 (425.5)	14.31 (363.5)	5.19 (131.8)
B2R	18.75 (476.3)	14.31 (363.5)	5.19 (131.8)
C3R	25.00 (635.0)	14.31 (363.5)	5.19 (131.8)
D1R	29.13 (739.8)	14.31 (363.5)	5.19 (131.8)
G1R	34.13 (866.8)	14.31 (363.5)	5.19 (131.8)
L1R	39.00 (990.6)	14.31 (363.5)	5.19 (131.8)
L2R	45.00 (1143.0)	14.31 (363.5)	5.19 (131.8)
2R	8.63 (219.1)	5.00 (127.0)	3.50 (88.9)
3R	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
4R	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
5R	9.44 (239.7)	4.50 (114.3)	3.00 (76.2)
6R	11.75 (298.5)	6.50 (165.1)	4.50 (114.3)
7R	13.00 (330.2)	11.00 (279.4)	3.56 (90.5)
8R	27.00 (685.8)	10.50 (266.7)	4.75 (120.7)
9R	14.25 (362.0)	6.50 (165.1)	4.00 (101.6)
C1R	21.00 (533.4)	14.31 (363.5)	5.19 (131.8)

Commercial Loadcenters—NEMA Type 1 Indoor

Box Size	Height	Width	Depth
19	44.00 (1117.6)	16.16 (410.4)	6.25 (158.8)
20	44.00 (1117.6)	16.16 (410.4)	6.25 (158.8)
22	54.00 (1371.6)	16.22 (412.0)	6.31 (160.3)
24	66.50 (1689.1)	16.22 (412.0)	6.31 (160.3)

Commercial Loadcenters—NEMA Type 3R Outdoor

Box Size	Height	Width	Depth
42	38.00 (965.2)	16.31 (414.3)	6.38 (161.9)
43	44.00 (1117.6)	16.31 (414.3)	6.38 (161.9)
46	54.00 (1371.6)	16.31 (414.3)	6.38 (161.9)
47	66.56 (1690.7)	16.31 (414.3)	6.38 (161.9)

New York City Loadcenters—NEMA Type 1 Indoor

Box Size	Height	Width	Depth
A	38.00 (965.2)	18.13 (460.4)	5.00 (127.0)
B	44.00 (1117.6)	18.13 (460.4)	5.00 (127.0)
C	66.50 (1689.1)	18.13 (460.4)	6.25 (158.8)

Types ECB and ECC Unit Enclosures—NEMA Type 1 Indoor

Height	Width	Depth
23.25 (590.6)	8.88 (225.4)	4.50 (114.3)

Types ECB and ECC Unit Enclosures—NEMA Type 3R Outdoor

Height	Width	Depth
23.68 (601.7)	9.31 (236.5)	5.44 (138.1)

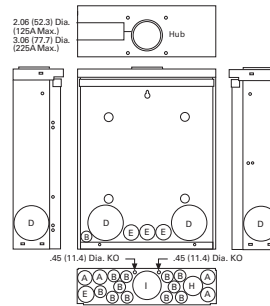
Approximate Dimensions in Inches (mm)

Residential Loadcenter Knockouts

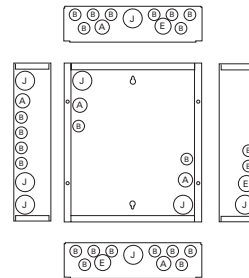
Knockouts for Box Sizes A1, B1, B2, C1, C2, C4, D1, G1, L1, L2, B1R, B2R, C1R, C3R, D1R, G1R, L1R, L2R

Code	Diameter				
A	0.50 (12.7)	0.75 (19.1)	—	—	—
B	0.50 (12.7)	—	—	—	—
C	0.50 (12.7)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
D	1.25 (31.8)	1.25 (31.8)	2.00 (50.8)	2.50 (63.5)	—
E	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—	—
F	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.50 (38.1)	2.00 (50.8)
G	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—	—
H	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
I	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
J	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—	—

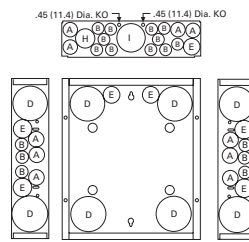
Residential NEMA Type 1 Indoor and NEMA Type 3R Outdoor Enclosures



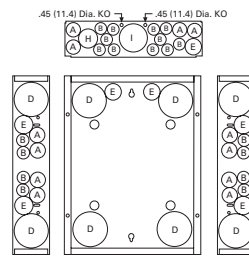
Outdoor Boxes
B1R, B2R, C1R, C3R, D1R,
G1R, L1R, L2R



Indoor Boxes
A1



Indoor Boxes
B1, B2



Indoor Boxes
C1, C2, C4, D1, G1, L1, L2

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

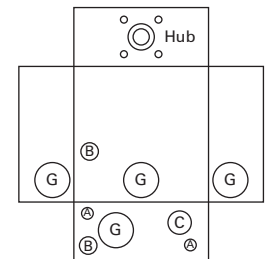
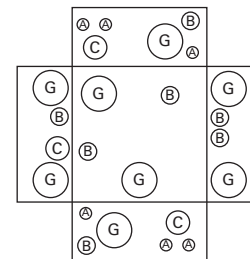
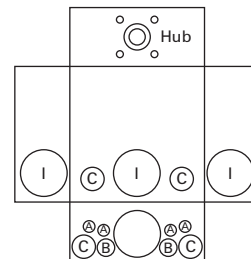
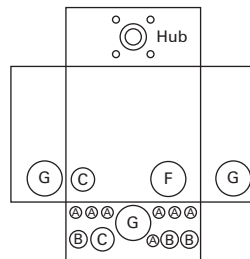
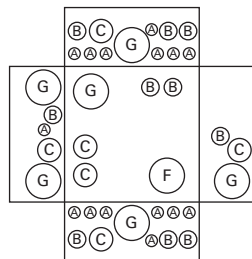
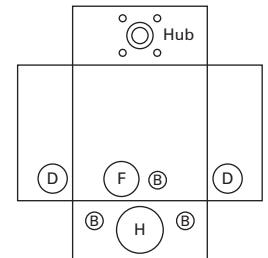
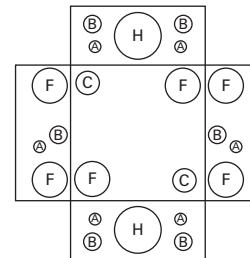
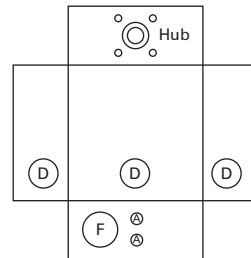
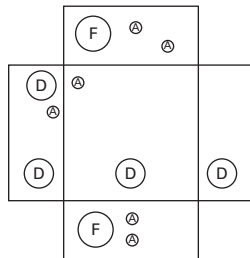
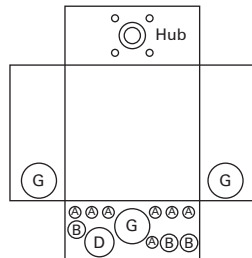
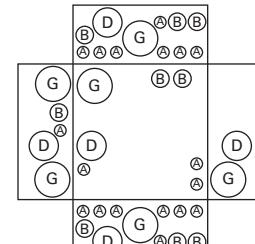
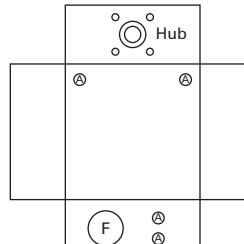
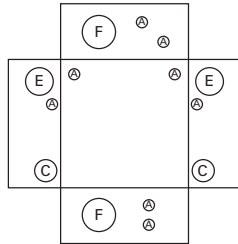
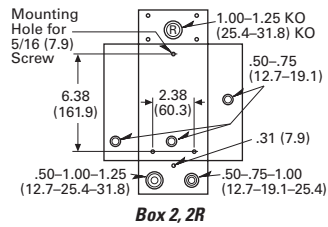
1

Approximate Dimensions in Inches (mm)

Knockouts for Box Sizes 3, 4, 5, 6, 7, 9, 2R, 3R, 4R, 5R, 6R, 7R, 8R, 9R

Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	—
D	0.50 (12.7)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)
E	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	—
F	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)
G	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	—
H	1.00 (25.4)	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)
I	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	—

Residential NEMA Type 1 Indoor and NEMA Type 3R Outdoor Enclosures



Approximate Dimensions in Inches (mm)

Commercial Loadcenter Knockouts

NEMA Type 1 Indoor Commercial Enclosures Knockouts for Box Sizes 19, 20, 22, 24

Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.75 (19.1)	1.00 (25.4)	1.50 (38.1)	—
D	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	3.00 (76.2)
E	2.00 (50.8)	2.50 (63.5)	3.00 (76.2)	—
F	2.50 (63.5)	3.00 (76.2)	3.50 (88.9)	—

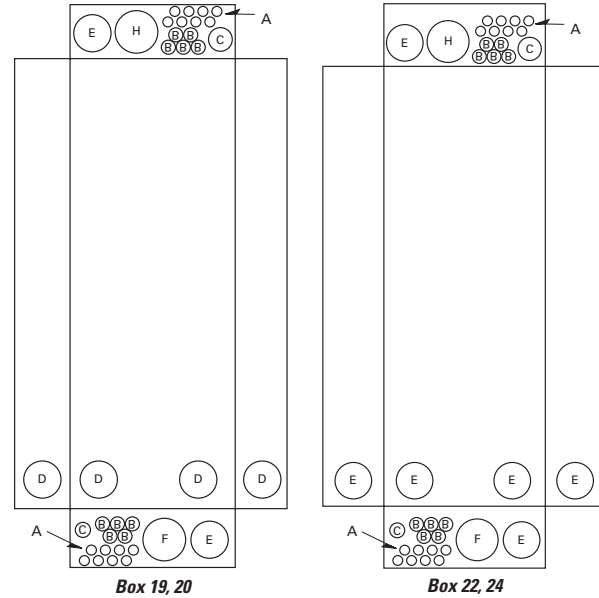
NEMA Type 3R Outdoor Commercial Enclosures Knockouts for Box Sizes 42, 43, 46, 47

Code	Diameter			
A	0.50 (12.7)	—	—	—
B	0.50 (12.7)	0.75 (19.1)	—	—
C	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	—
D	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)	—
E	2.00 (50.8)	2.50 (63.5)	3.00 (76.2)	—
F	2.50 (63.5)	3.00 (76.2)	3.50 (88.9)	—
G	1.25 (31.8)	1.50 (38.1)	2.00 (50.8)	2.50 (63.5)
H	3.25 (82.6) Sq.	—	—	—

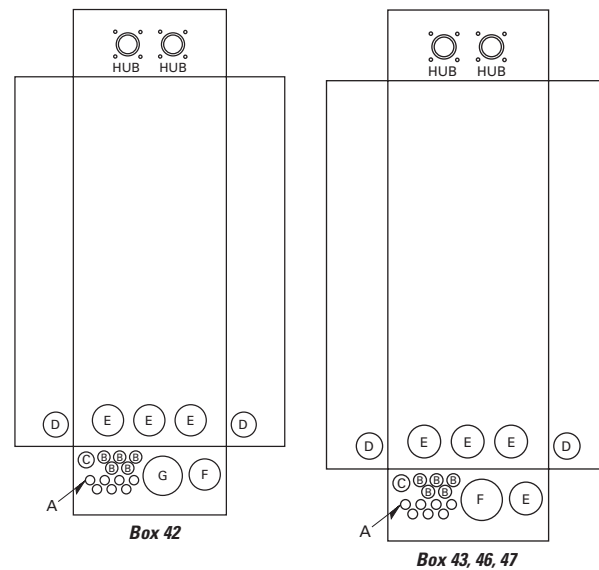
Unit Enclosure Knockouts, Types ECB and ECC Knockouts

Code	Diameter			
NEMA Type 1 Indoor (Flush and Surface Trims)				
A	0.50 (12.7)	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)
NEMA Type 3R Outdoor				
A	0.50 (12.7)	—	—	—
B	1.25 (31.8)	1.50 (38.1)	1.75 (44.5)	2.00 (50.8)

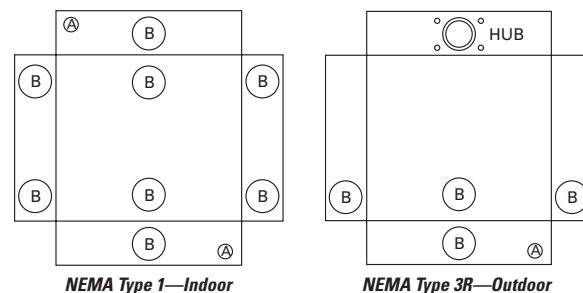
Indoor Commercial Enclosures



Outdoor Commercial Enclosures



Unit Enclosure Knockouts



Technical Data and Specifications**General**

- A. The Contractor shall furnish and install deadfront loadcenters incorporating circuit breakers of the number, rating and type as specified herein and as shown on the contract drawings.
- B. The loadcenter and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL, NEMA and NEC including:
 - 1. UL 67—Standards for Panelboards.
- C. UL 50—Standards for Cabinets and Boxes.
- D. UL 489—Standards for Molded Case Circuit Breakers.
- E. UL 869—Standards for Service Equipment.
- F. Federal Specification W-C 375B—Circuit Breakers.
- G. Federal Specification W-C P115b—Panel Power Distribution Type 1, Class 2.

Qualifications

- A. The manufacturer of the loadcenter shall be the manufacturer of the circuit breaker within the loadcenter.
- B. For the equipment specified herein, the manufacturer shall be ISO 9000 certified.
- C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of seven (7) years.

Manufacturers

- A. Eaton.

Ratings

- A. Loadcenters shall be rated for 120/240 Vac and shall have short-circuit ratings as shown on the drawings or as herein scheduled, but not less than 10,000 amperes rms symmetrical.
- B. Circuit breakers shall be a minimum of 125A frame. Circuit breakers 15 through 125A trip size shall take up the same pole spacing.
- C. Loadcenters shall be labeled with a UL short-circuit rating. When series combination ratings are applied with integral or remote upstream devices, a label shall be provided. Series combination ratings shall cover all trip ratings of installed frames. It shall state the conditions of the UL series ratings including:
 - 1. Size and type of upstream device.
 - 2. Branch devices that can be used.
 - 3. UL series short circuit rating.

Construction

- A. All interiors, with the exception of the branch circuit breakers, shall be completely factory assembled with main breakers, main lugs, or no main device.
- B. Interiors shall be designed so that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be designed so that circuits may be changed without machining, drilling, or tapping.

- C. Physical means shall be provided to prevent the installation of more overcurrent devices than that number for which the enclosure was designed, rated and approved. Half-size breakers shall have a UL listed rejection tab over the line terminals. Loadcenter interiors must have notched stabs to accept these rejection tab class CTL breakers, if required and approved.

Bus

- A. Bus bars for the main and cross connectors shall be [tin-plated aluminum] [copper] in accordance with Underwriters Laboratories standards. Busing shall be braced throughout to conform to industry standard practice governing short-circuit stresses in loadcenters.
- B. Neutral busing shall have a suitable lug for each outgoing feeder requiring a neutral connection of same ampacity as branch.

Note: Note to spec writer—select one (copper available in limited ratings).

Wiring/Termination

- A. All wire connectors and terminals shall be of the anti-turn solderless type and shall be suitable for copper or aluminum wire of the sizes indicated. All connectors must meet the "Requirements for Wire Connectors and Soldering Lugs" as stated in UL 486B.
- B. All loadcenters where marked shall be suitable for use with 60°C or 75°C rated wire.

Circuit Breakers

- A. Circuit breakers shall be molded case type. Circuit breakers shall have four-rivet construction (GFI Type—5 rivets). Multipole circuit breakers shall be of a stack pole design to provide electrical phase isolation.
- B. Each pole of the circuit breaker will provide inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors.
- C. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. The thermal bimetal element shall be welded to the steel frame and calibration shall be set independent of the molded case by computer controlled equipment.
- D. All circuit breakers shall be operated by a toggle-type handle and multipole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide visual trip indication.
- E. Contacts shall be of non-welding silver alloy.
- F. All circuit breakers shall have the trip rating inscribed on the handle on each circuit breaker pole. Also, unique color-coded cases that indicate the UL listed 10 kA or 22 kA interrupting ratings. Breakers shall be able to be used as main or branch disconnect devices.

- G. Branch circuit breakers may also be used in the 1/2-inch (12.7 mm) per pole ratings that include two-pole 1-inch (25.4 mm) wide modules and four-pole 2-inch (50.8 mm) wide modules. Two-pole circuit breakers must incorporate a common trip mechanism. The exclusive CTL rejection tab feature shall be provided to limit the number of branch devices for a loadcenter to 42, in compliance with NEC Article 384.15.
- H. Circuit breakers shall be completely enclosed in a molded case of thermoset material. No internal aluminum parts shall be used. All internal ferrous parts shall be plated to prevent corrosion.
- I. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug or clamp type design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60°C or 75°C wire.
- J. The calibrated bimetal assembly shall be mechanically isolated from the load terminal using a flexible braided copper shunt wire, such that movement of the terminals due to twisting and overtightening does not affect breaker calibration.
- K. Breakers shall be SWD rated and/or HACR rated as required.
- L. Arc Fault Interrupting circuit breakers, (AFI), shall be provided on all 15 and 20A single-phase 120/240 Vac circuits except those indicated as remote controlled breakers. AFI breakers shall be “Classified for mitigating the effects of arcing faults,” or conforming to UL Standard 1699 and as defined by Article 210.12 Section A of the 1999 NEC Code.
- C. The deadfront shall have an easy adjustment feature for flush applications.
- D. Boxes shall be factory assembled into a single rigid structure.
- E. Unless otherwise noted on drawings, hinged doors covering all circuit breaker handles shall be included in all trims. Trim doors shall not uncover any live parts in making the circuit breaker handles accessible. If key locks are required, all locks shall be keyed alike.
- F. Combination trims for flush and surface panels shall be flat and shall overlap the box by at least 5/8-inch (15.9 mm) all around. Trims shall be mounted by a screwdriver without the need for special tools.

Surge Protection Devices

See Volume 1, Tab 2 for complete details on surge protection.

Enclosures

- A. Loadcenter shall have NEMA Type 1 general purpose or NEMA Type 3R rainproof enclosures as indicated on the drawings and shall be surface or combination flush/surface mounted except where noted.
- B. Boxes shall be made from galvanized sheet steel having multiple knockouts. Rainproof boxes shall use galvanized steel or an approved coating system which meets or exceeds standards for outdoor NEMA Type 3R enclosures. Boxes shall be of sufficient size to provide at least a minimum code gutter space on all sides.

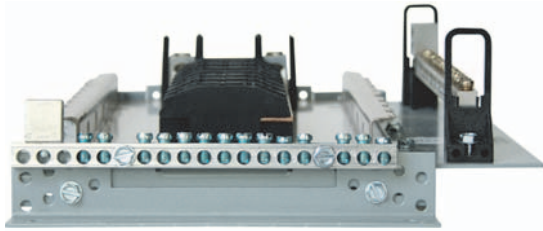
Finish

- A. Trims shall be bonderized and finished with a light gray ANSI-61 enamel. The paint finish shall be of a type to which field applied paint will adhere.

Factory Testing

- A. The standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of UL and NEMA.

BRRETRO



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Riser Panel	V1-T1-58
Type BR Renovation Loadcenter	V1-T1-59
Type BR Retrofit Interior Kits	
BR Circuit Breakers	V1-T1-72

Type BR Retrofit Interior Kits

Product Description

Replacing existing loadcenters and panelboards can be a time consuming and expensive job. BR retrofit kits can be the solution to save time and money. The kit consists of a standard trim to fit the interior, a picture frame trim to fit the existing box, and a field adjustable interior assembly that includes neutral and ground bars as well. These are especially applicable when the existing box is flush mounted in drywall, plaster or block wall. The existing box, and many times existing wiring, can remain. Interiors are UL recognized under UL 67, Panelboard standard.

Features

Detailed Product Guide

All standard retrofit kits are suitable for a range of existing box sizes:

- Box width ranging from 14.50 to 22.00 inches (368.3 to 558.8 mm)
- Box depth ranging from 4.00 inches (101.6 mm) for BR
- Box height ranging from 21.00 to 45.00 inches (533.4 to 1143.0 mm)

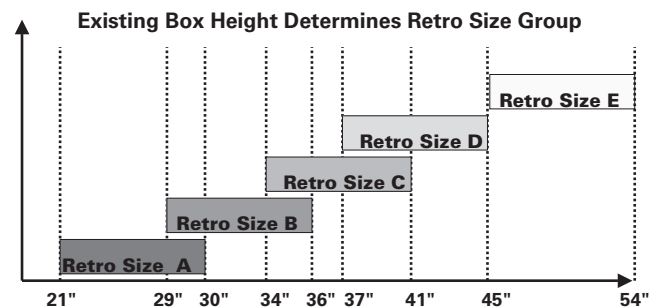
For box dimensions outside of these ranges, contact the Lincoln Flex Center at 800-330-6479. Be sure to provide the existing incoming line wire size.

Product Selection

To select the retrofit kit:

1. From the existing box size determine which retrofit groups are suitable (may be more than one).
2. Use type of interior, number of phases, and type of main to find the selection chart.
3. Select part number from chart (if main breaker, replace XXX with specific amp rating).
4. Note that the overlap of the existing wall is the retro cover size minus the existing box size. If specific measurements are needed, communicate that you need a custom trim size.
5. Contact the Lincoln Flex Center at 800-330-6479 for pricing, lead-times, and order entry instructions.

Retro Size Groups



Quick-ProSM

All you need to know to save time and make more money.

Specified on certain Eaton products, the Quick-Pro symbol allows for immediate recognition of products that are designed for straightforward installation. When you see Quick-Pro, you know you can install quickly—sometimes up to 50% less than the usual installation time—and move on to your next job.

Retrofit Stocking Kits (BR and CH Kits Available)

Five recommended groups: existing box height determines retro group size. Approximate Dimensions in Inches (mm).

Catalog Number ^①	Cover ^②	Existing Enclosure Parameters—Inches (mm)				Minimum Height	Maximum Height	Phase	Main	Bus	Amperes ^③	Circuits	UL67 Listed
		Minimum Depth	Maximum Depth	Minimum Width	Maximum Width								
BR Retrofit Interiors and Covers													
RTBR8L100P	CRTBR8ML****	3.13 (79.5)	3.63 (92.2)	10.50 (266.7)	20.00 (508.0)	13.00 (330.2)	26.00 (660.4)	Single	MLO	BR	100	8	Yes
RUBR8L100_	CRTBR8ML****	3.75 (95.3)	6.00 (152.4)	10.50 (266.7)	20.00 (508.0)	13.00 (330.2)	26.00 (660.4)	Single	MLO	BR	100	8	Yes
RTBR12L100P	CRTBR12ML****	3.13 (79.5)	3.63 (92.2)	10.50 (266.7)	20.00 (508.0)	14.50 (368.3)	26.00 (660.4)	Single	MLO	BR	100	12	Yes
RTBR10B100P	CRTBR12ML****	3.13 (79.5)	3.63 (92.2)	10.50 (266.7)	20.00 (508.0)	14.50 (368.3)	26.00 (660.4)	Single	MLO	BR	100	10	Yes
RUBR12L100_	CRUBR12ML****	3.75 (95.3)	6.00 (152.4)	10.50 (266.7)	20.00 (508.0)	14.50 (368.3)	26.00 (660.4)	Single	MLO	BR	100	12	Yes
RUBR10B100_	CRUBR12ML****	3.75 (95.3)	6.00 (152.4)	10.50 (266.7)	20.00 (508.0)	14.50 (368.3)	26.00 (660.4)	Single	MB	BR	100	10	Yes
RTBR12L125P	CRTBR12ML****	3.13 (79.5)	3.63 (92.2)	11.00 (279.4)	20.00 (508.0)	17.00 (431.8)	26.00 (660.4)	Single	MLO	BR	125	12	Yes
RTBR10B125P	CRTBR12ML****	3.13 (79.5)	3.63 (92.2)	11.00 (279.4)	20.00 (508.0)	17.00 (431.8)	26.00 (660.4)	Single	MB	BR	125	10	Yes
RUBR12L125_	CRUBR12ML****	3.75 (95.3)	6.00 (152.4)	11.00 (279.4)	20.00 (508.0)	17.00 (431.8)	26.00 (660.4)	Single	MLO	BR	125	12	Yes
RUBR10B125_	CRUBR12ML****	3.75 (95.3)	6.00 (152.4)	11.00 (279.4)	20.00 (508.0)	17.00 (431.8)	26.00 (660.4)	Single	MB	BR	125	10	Yes
RABR20B125_	CRABR20ML****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	20.00 (508.0)	21.00 (533.4)	30.00 (762.0)	Single	MCB	BR	125	20	No
RABR20L125_	CRABR20ML****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	20.00 (508.0)	21.00 (533.4)	30.00 (762.0)	Single	MLO	BR	125	20	No
RBBR20B200_	CRBBR20BW****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	22.00 (558.8)	29.00 (736.6)	36.00 (914.4)	Single	MLO	BR	200	20	No
RCBR40L200_	CRCBR40ML****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	22.00 (558.8)	34.00 (863.6)	41.00 (1041.4)	Single	MLO	BR	200	20	No
RDBR40B200_	CRDBR40BW****	3.75 (95.3)	6.00 (152.4)	13.00 (330.2)	22.00 (558.8)	37.00 (939.8)	45.00 (1143.0)	Single	MLO	BR	200	20	No

Notes

- ① Catalog numbers shown with "_" at the end need one of the following suffixes to denote depth:
 J = 3.75–4.25
 K = 4.25–5.00
 L = 5.00–6.00
 N = Non-adjustable
 Example: RTBR12L125J would signify an interior set with a depth range of 3.75- to 4.25-inches.
- ② *Denotes characters in the catalog number that relate to overall cover size.
 Example: CRTBR12ML2620 would signify a cover 26.00 inches H x 20.00 inches W.
- ③ Amperes for MB panels is maximum; catalog number will reflect actual amperage of breaker included.

BR Circuit Breakers



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BR Circuit Breakers

Product Description

Plug-On Branch Feeder Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

A branch feeder type arc fault circuit interrupter is a device intended to mitigate high current arcing faults in the complete circuit, including connected cords. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults.

The branch feeder type AFCI is required in the 1999 and 2002 National Electrical Code.

The Combination Type AFCI is required in the 2005, 2008, and 2011 National Electrical Code.

Plug-On Combination Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

A combination type arc fault circuit interrupter is a device that includes all of the protection offered by the branch feeder AFCI (mitigation of high current arcing faults in the complete circuit, including connected cords). In addition it provides direct detection of persistent low current arcing faults down to 5 amps with associated mitigation of fire hazards in the cords connected to the outlets. High current arcing faults can occur from line to neutral or line to ground. These arcing faults are in parallel with the load and produce the most energy of all arcing faults. The current level of low current arcing faults is limited by the load.

Plug-On Ground Fault Circuit Breakers, Type GFCB and GFEP—10/22 kAIC, 120 Vac and 120/240 Vac

Ground Fault

Application Notes

Single-pole GFCBs are designed for use in two-wire, 120 Vac circuits. See **Page V1-T1-83** for a typical wiring configuration.

Two-pole GFCBs are designed for use in three-wire, 120/240 Vac circuits, 120 Vac multiwire circuits employing common, neutral and two-wire, 240 Vac circuits obtained from a 120/240 Vac source.

Page V1-T1-83 shows typical wiring configurations for a 120/240 Vac multiwire circuits, and a 240 Vac, two-wire circuit. Note the “panel neutral” conductor connects to the neutral bar, even though the neutral is not included in the load circuit. This connection is necessary to supply a 120 Vac power source to the ground fault sensing circuit.

The figures are shown with a 120/240 Vac, single-phase, three-wire power source, but are also applicable to a 120/208 Vac, three-phase, four-wire power supply. For all figures, the electrical operation of the GFCB is not affected by the equipment ground.

Non-CTL Plug-On Replacement—Circuit Breakers, Type BRD—10 kAIC, 120/240 Vac

Non-CTL 10 kAIC for Replacement Purposes Only

For replacement in enclosures manufactured prior to 1968 with unnotched stabs. Circuit breakers do not have rejection tab.

Product Selection

Plug-On Circuit Breakers, Types BR—10/22/42 kAIC, 120 Vac, 120/240 Vac and 240 Vac

Type BR Breakers, 1-Inch (25.4 mm) per Pole 120/240, 10, 22 and 42 kAIC

BR120



BR215




BR320



BRH2100



Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120/240 Vac Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton		Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton			
		10 kAIC Catalog Number	22 kAIC Catalog Number	10 kAIC Catalog Number	22 kAIC Catalog Number	42 kAIC Catalog Number	
10	#14-4	BR110	—	BR210	—	—	
15	#14-4	BR115 ①②	BRH115	BR215 ③	BRH215	—	
20	#14-4	BR120 ①②	BRH120	BR220 ③	BRH220	—	
25	#14-4	BR125	BRH125	BR225 ③	BRH225	—	
30	#14-4	BR130	BRH130	BR230 ③	BRH230	—	
35	#14-4	BR135	BRH135	BR235 ③	BRH235	—	
40	#14-4	BR140	BRH140	BR240 ③	BRH240 ③	—	
45	#14-4	—	BRH145	BR245 ③	BRH245	—	
50	#14-4	BR150	BRH150	BR250 ③	BRH250 ③	—	
55	#14-3	BR150	BRH155	BR255	BRH255	—	
60	#8-1/0	BR160	BRH160	BR260	BRH260	BRHH260	
70	#8-1/0	BR170	BRH170	BR270	BRH270	BRHH270	
80	#8-1/0	—	—	BR280	BRH280	BRHH280	
90	#8-1/0	—	—	BR290	BRH290	BRHH290	
100	#8-1/0	—	—	BR2100	BRH2100	BRHH2100	
110	#8-1/0	—	—	BR2110	BRH2110	BRHH2110	
125	#4-2/0	—	—	BR2125	BRH2125	BRHH2125	
150	#4-2/0	—	—	BR2150 ④	—	—	

Notes

- ① One pole, 1-inch (25.4 mm) per pole circuit breakers are available with high magnetic setting for switching large tungsten lamp loads. Add suffix H to catalog number.
- ② Switching duty rated.
- ③ On the black handle breaker, add suffix "B" to the catalog number to obtain a tapped molded opening for proper use with hold-down kits.
- ④ For use as a branch circuit breaker in 400 and 600 ampere panels only.

All Type BR single-, two- and three-pole circuit breakers carry listing for HACR application. For circuit breakers with a shunt trip, add ST suffix.

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1

BR Breakers



Type BR Breakers, 1-Inch (25.4 mm) per Pole 240 Vac, 10, 22 and 42 kAIC

Three-Pole 240 Vac
Common Trip Requires Three
1-Inch (25.4 mm) Spaces
5 per Shelf Carton



Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	10 kAIC Catalog Number	22 kAIC Catalog Number
10	#14-4	BR310	—
15	#14-4	BR315 ①	BRH315
20	#14-4	BR320 ①	BRH320
25	#14-4	BR325	BRH325
30	#14-4	BR330	BRH330
35	#14-4	BR335	BRH335
40	#14-4	BR340	BRH340
45	#14-4	BR345	BRH345
50	#14-4	BR350	BRH350
55	#14-3	BR355	BRH355
60	#4-1/0	BR360	BRH360
70	#4-1/0	BR370	BRH370
80	#4-1/0	BR380	BRH380
90	#4-1/0	BR390	BRH390
100	#4-1/0	BR3100	BRH3100

Plug-On Branch Feeder Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

Type BR AFCI Circuit Breaker



Type BR, 1-Inch (25.4 mm) Wide FIRE-GUARD AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI	BR115AF ②
	20	AFCI	BR120AF ②
Single-pole 22 kAIC	15	AFCI	BRH115AF
	20	AFCI	BRH120AF
Two-pole 10 kAIC ③④	15	AFCI Common Trip	BRL215AF
	20	AFCI Common Trip	BRL220AF

Notes

① One pole, 1-inch (25.4 mm) per pole circuit breakers are available with high magnetic setting for switching large tungsten lamp loads. Add suffix H to catalog number.

② Clamshell packaging available with CS modification code on the end of catalog number.

③ Common trip refers to two-pole 240V load application sourced by 120/240 Vac (see **Page V1-T1-83**).

④ Independent trip refers to two-pole multi-wire, home run or shared neutral circuits (see **Pages V1-T1-83 and V1-T1-84**).

All Type BR single-, two- and three-pole circuit breakers carry listing for HACR application. For circuit breakers with a shunt trip, add ST suffix.

Plug-On Combination Type Arc Fault Circuit Breakers, Type BR—10 kAIC, 120 Vac and 120/240 Vac

BRCAF115



Type BR, 1-Inch (25.4 mm) wide FIRE-GUARD Combination Type AFCI Circuit Breakers

Poles	Ampere Rating	Configuration	Catalog Number
Single-pole 10 kAIC	15	AFCI	BRCAF115 ①
		Diagnostic AFCI	BRACAF115
	20	AFCI	BRCAF120 ①
		Diagnostic AFCI	BRACAF120
Single-pole 22 kAIC	15	AFCI	BRHCAF115 ①
	20	AFCI	BRHCAF120 ①
Two-pole 10 kAIC	15	AFCI	BRL215CAF
	20	AFCI	BRL220CAF

Plug-On Ground Fault Circuit Breakers, Type GFCB and GFEP—10/22 kAIC, 120 Vac and 120/240 Vac

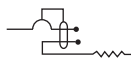
Type GFCB Single-Pole



Type GFCB Two-Pole



Type GFCB Ground Fault Circuit Breakers—5 Milliampere—1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC



Single-Pole 120 Vac
Requires One
1-Inch (25.4 mm) Space
1 per Shelf Carton
Catalog Number ②



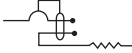

Two-Pole 120/240 Vac
Common Trip Requires Two
1-Inch (25.4 mm) Spaces
1 per Shelf Carton
Catalog Number

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	Single-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number ②	Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces 1 per Shelf Carton Catalog Number
15	#14–4	GFCB115	GFCB215
20	#14–4	GFCB120	GFCB220
25	#14–4	GFCB125	GFCB225
30	#14–4	GFCB130	GFCB230
40	#14–4	GFCB140	GFCB240
50	#14–4	—	GFCB250 ③
60	#14–6	—	GFCB260



Notes

- ① Clamshell packaging available with CS modification code on the end of catalog number.
- ② Available with bell alarm or auxiliary switch. See circuit breaker accessories on **Page V1-T1-81**.
- ③ For use with copper wire only.

Type GFCBH Ground Fault Breakers—5 Milliampere— 1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 22 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C		
		Single-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Spaces 1 per Shelf Carton Catalog Number
15	#14-4	GFCBH115	GFCBH215
20	#14-4	GFCBH120	GFCBH220
25	#14-4	GFCBH125	GFCBH225
30	#14-4	GFCBH130	GFCBH230

Type GFEP Ground Fault Equipment Protectors—30 Milliampere— 1-Inch (25.4 mm) per Pole 120 Vac or 120/240 Vac, 10 kAIC

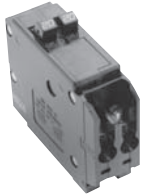
Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C		
		Single-Pole 120 Vac Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number	Two-Pole 120/240 Vac Common Trip Requires Two 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number
15	#14-4	GFEP115	GFEP215
20	#14-4	GFEP120	GFEP220
25	#14-4	GFEP125	GFEP225
30	#14-4	GFEP130	GFEP230
40	#14-4	—	GFEP240
50	#14-4	—	GFEP250 ①

Note

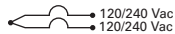
① For use with copper wire only.

CTL Plug-On Circuit Breakers, Type BD Duplex, BQ and BQC Quadplex—10 kAIC, 120/240 Vac

BD2020

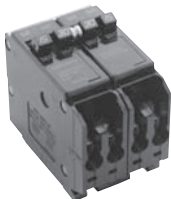


Type BD Duplex
(UL Type BRD)

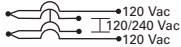


Single-Pole ①
Requires One 1-Inch
(25.4 mm) Space
10 per Shelf Carton

BQ2302115

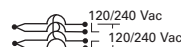


Type BQ Quadplex Independent Trip
(UL Type BRD)



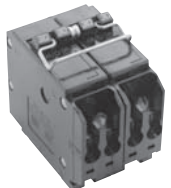
Two-Pole ② and **Single-Pole** ①
Requires Two 1-Inch
(25.4 mm) Spaces
5 per Shelf Carton

Type BQ Quadplex Independent Trip
(UL Type BRD)



Two-Pole
Requires Two 1-Inch
(25.4 mm) Spaces
5 per Shelf Carton

BQ230230



Ampere Rating	Catalog Number	Wire Size Range Cu/Al 65°C or 75°C	Ampere Rating			Catalog Number	Ampere Rating	Center Two-Pole Independent Trip	Catalog Number
			Outer Left Single-Pole	Center Two-Pole Independent Trip	Outer Right Single-Pole				
10–10	BD1010	#14–4	15	20	15	BQ2202115	15	15	BQ215215
15–15	BD1515	#14–4	20	20	20	BQ2202120	15	20	BQ215220
15–20	BD1520	#14–4	15	30	15	BQ2302115	15	30	BQ215230
15–30	BD1530	#14–4	20	30	20	BQ2302120	15	40	BQ215240
20–15	BD2015	#14–4	15	40	15	BQ2402115	15	50	BQ215250
20–20	BD2020	#14–4	20	40	20	BQ2402120	20	20	BQ220220
20–30	BD2030	#14–4	15	50	15	BQ2502115	20	30	BQ220230
25–25	BD2525	#14–4	20	50	20	BQ2502120	20	40	BQ220240
30–15	BD3015	#14–4	—	—	—	—	20	50	BQ220250
30–20	BD3020	#14–4	—	—	—	—	25	25	BQ225225
30–30	BD3030	#14–4	—	—	—	—	30	30	BQ230230
30–40	BD3040	#14–4	—	—	—	—	30	40	BQ230240
30–50	BD3050	#14–4	—	—	—	—	30	50	BQ230250
50–30	BD5030	#14–4	—	—	—	—	40	40	BQ240240
50–50	BD5050	#14–4	—	—	—	—	40	50	BQ240250
—	—	—	—	—	—	—	50	50	BQ250250

Notes

- ① All 15 and 20A single poles are switch-duty rated.
- ② All Type BD duplex and BQ quadplex circuit breakers carry listing for HACR applications.

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

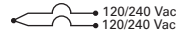
1 Non-CTL Plug-On Replacement—Circuit Breakers, Type BRD—10 kAIC, 120/240 Vac

BR2020

Class Non-CTL, 1-Inch (25.4 mm) per Pole 10 kAIC—Breakers Do Not Have Rejection Tab Feature



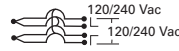
Type BR Duplex



Single-Pole Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton

Ampere Rating	120 Vac Catalog Number	Wire Size Range Cu/Al 65°C or 75°C
15–15	BR1515	#14–4
15–20	BR1520	#14–4
20–15	BR2015	#14–4
20–20	BR2020	#14–4
30–30	BR3030	#14–4
30–50	BR3050	#14–4

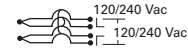
Type Brand BRD Quadplex Independent Trip



Two-Pole Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton

120/240 Vac Ampere Rating	120/240 Vac Ampere Rating
Outer Two-Pole Independent Trip	Center Two-Pole Independent Trip
15	15
20	20
30	30
20	30
30	40
30	50

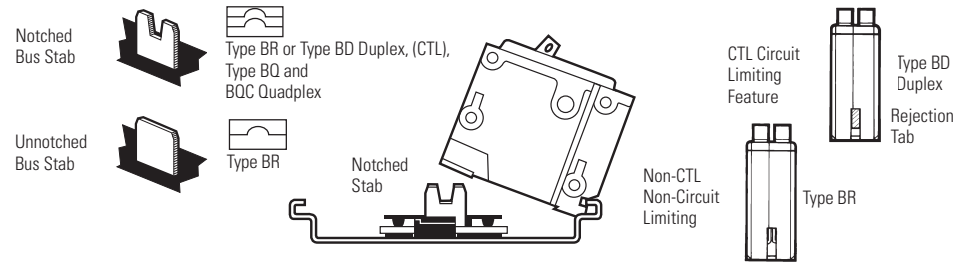
Type BRD Quadplex Common Trip Center and Outer Poles



Two-Pole Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton

120/240 Vac Ampere Rating	Outer Two-Pole Common Trip	Center Two-Pole Common Trip	Catalog Number
15	15	15	BRD215215
30	30	30	BRD230230
30	30	40	BRD230240
30	30	50	BRD230250
—	—	—	—
—	—	—	—

CTL and Non-CTL Breakers

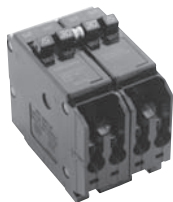


Note

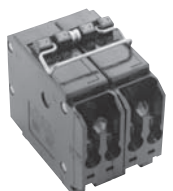
Type BD Duplex, BQ and BQC Quadplex circuit breakers can be installed in Circuit Limiting (CTL) listed BR loadcenters. Type BR twin breakers can be installed in Non-CTL BR loadcenters.

Common Trip Quadplex Breakers

BQC2302115

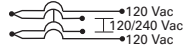


BQC2302115



Class CTL, 1-Inch (25.4 mm) per Pole 10 kAIC—All Circuit Breakers Have Rejection Tab Feature

Type BQC Quadplex Common Trip Center Poles (UL Type BRD)



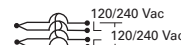
Two-Pole ① and Single-Pole ② Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton

120 Vac 120/240 Vac 120 Vac

Ampere Rating

Outer Left Single-Pole	Center Two-Pole Common Trip	Outer Right Single-Pole	Catalog Number	Wire Size Range Cu/Al 65°C or 75°C
15	20	15	BQC2202115	#14-4
15	25	15	BQC2252115	#14-4
15	30	15	BQC2302115	#14-4
15	40	15	BQC2402115	#14-4
15	50	15	BQC2502115	#14-4
—	—	—	—	#14-4
—	—	—	—	#14-4
—	—	—	—	#14-4
20	15	20	BQC2152120	#14-4
20	20	20	BQC2202120	#14-4
20	25	20	BQC2252120	#14-4
20	30	20	BQC2302120	#14-4
20	40	20	BQC2402120	#14-4
20	50	20	BQC2502120	#14-4
30	50	20	BQC2502030	#14-4
—	—	—	—	#14-4
—	—	—	—	#14-4
—	—	—	—	#14-4
—	—	—	—	#14-4
—	—	—	—	#14-4

Type BQC Quadplex Common Trip Center and Outer Poles (UL Type BRD)



Two-Pole ① Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton

120/240 Vac

Ampere Rating

Outer Two-Pole Common Trip	Center Two-Pole Common Trip	Catalog Number
15	15	BQC215215
15	20	BQC215220
15	30	BQC215230
20	15	BQC220215
20	20	BQC220220
20	30	BQC220230
20	40	BQC220240
20	50	BQC220250
25	25	BQC225225
25	30	BQC225230
30	15	BQC230215
30	30	BQC230230
30	40	BQC230240
30	50	BQC230250
40	30	BQC240230
40	40	BQC240240
40	50	BQC240250
50	20	BQC250220
50	50	BQC250250

Notes

- ① All Type BQC quadplex circuit breakers carry listing for HACR applications.
- ② All 15 and 20 ampere single poles are switch-duty rated.

1.2

Loadcenters and Circuit Breakers

Type BR Loadcenters and Circuit Breakers

1 Plug-On Circuit Breakers, Types BJ and BJH—10/22 kAIC, 120/240 Vac and 240 Vac

For Use in Single-Phase and Three-Phase Loadcenters—150 Amperes and Above

Type BJ



Types BJ and BJH Breakers, 1-Inch (25.4 mm) per Pole, 120/240 or 240 Vac, 10, 22 kAIC



Two-Pole 120/240 Vac
Common Trip Requires Four
1-Inch (25.4 mm) Spaces ^①
10 per Shelf Carton



Three-Pole 240 Vac
Common Trip Requires Six
1-Inch (25.4 mm) Spaces ^②
5 per Shelf Carton

Ampere Rating	10 kAIC Catalog Number	22 kAIC Catalog Number	Wire Size Range Cu/Al 60°C or 75°C	10 kAIC Catalog Number	22 kAIC Catalog Number
125	BJ2125	BJH2125	#2–300 kcmil	BJ3125	BJH3125
150	BJ2150	BJH2150	#2–300 kcmil	BJ3150	BJH3150
175	BJ2175	BJH2175	#2–300 kcmil	BJ3175	BJH3175
200	BJ2200	BJH2200	#2–300 kcmil	BJ3200	BJH3200
225	BJ2225	BJH2225	#2–300 kcmil	BJ3225	BJH3225

Plug-On Special Application Circuit Breakers—10 kAIC, 120 Vac, 120/240 Vac and 240 Vac

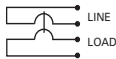
BRWH215

Water Heater Breaker



Special Application Circuit Breakers, 1-Inch (25.4 mm) per Pole

Water Heater Breakers

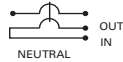


Two-Pole 120/240 Vac
Common Trip Requires Two
1-Inch (25.4 mm) Spaces

With Isolated Line Terminals
for Separately Metered
Water Heaters

5 per Shelf Carton
10 kAIC

Switching Neutral Breakers



Two-Pole 120 Vac
Common Trip Requires Two
1-Inch (25.4 mm) Spaces

With Switching Neutral Pole
for Gasoline Pump Applications

5 per Shelf Carton
10 kAIC

240V Breakers



Two-Pole 240 Vac
Common Trip Requires Two
1-Inch (25.4 mm) Spaces

Where Voltage to
Ground is 240 Vac
5 per Shelf Carton
10 kAIC

Non-Automatic Molded Case Switches



Two-Pole 240 Vac
Requires Two
1-Inch (25.4 mm) Spaces

For Use as Disconnect Contains No
Magnetic or Thermal Trip Properties
5 per Shelf Carton
5 kAIC

BRSN220
Switching Neutral
Breaker



Ampere Rating	Catalog Number	Ampere Rating	Catalog Number	Wire Size Range Cu/Al 60°C or 75°C	Ampere Rating	Catalog Number	Ampere Rating	Catalog Number
15	BRWH215	15	BRSN215	#14–4	10	BR210H	—	—
20	BRWH220	20	BRSN220	#14–4	15	BR215H	—	—
30	BRWH230	25	BRSN225	#14–4	20	BR220H	—	—
—	—	30	BRSN230	#14–4	25	BR225H	—	—
—	—	—	—	#14–4	30	BR230H	—	—
—	—	—	—	#14–4	35	BR235H	—	—
—	—	—	—	#14–4	40	BR240H	—	—
—	—	—	—	#14–4	45	BR245H	—	—
—	—	—	—	#14–4	50	BR250H	50	BR250NA
—	—	—	—	#14–4	55	BR255H	—	—
—	—	—	—	#4–1/0	60	BR260H	60	BR260NA
—	—	—	—	#4–1/0	70	BR270H	—	—
—	—	—	—	#4–1/0	80	BR280H	—	—
—	—	—	—	#4–1/0	90	BR290H	—	—
—	—	—	—	#4–1/0	100	BR2100H	100	BR2100NA

Notes

^① Breaker uses two 1-inch (25.4 mm) pole spaces on left side and two 1-inch (25.4 mm) pole spaces on right side of loadcenter.

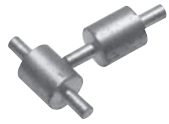
^② Breaker uses three 1-inch (25.4 mm) pole spaces on left side and three 1-inch (25.4 mm) pole spaces on right side of loadcenter.

If BJ or BJH breakers are used as a main or a back feed device, a hold-down kit is required. See **Page V1-T1-81**.

Circuit Breaker Accessories

THS1

Field Installation Kits and Parts



Description

Ordering Quantity ^①

Catalog Number

Handle Ties ^②

Handle tie bar for physically joining the handles of two adjacent single-pole Type BR circuit breakers (metal cylinder pin type)

10

BHT

BHLW2

Handle tie bar for joining two independent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers

10

THOW



Handle tie bar for joining two adjacent outside poles of Types BQ and BQC Quadplex and outside poles of two Type BD duplex circuit breakers

10

THS1

BRQLW

Handle Lockoffs ^{③④}

Padlockable device for locking the handle of single-, two- or three-pole Type BR Circuit Breakers and single-pole of a Type BD Duplex or one independent outside pole of a Type BQ or BQC Quadplex circuit breakers (escutcheon mounted) ^⑤

10

BRLW



Padlockable device for locking the handle of a single-pole Type BR circuit breaker (handle mounted) ^⑥

10

BRLW1

MCBPL (Installed)

Padlockable device for locking the handle of a two- and three-pole Type BR circuit breaker (handle mounted) ^⑥

10

BRLW2



Padlockable device for locking the handle of a single-pole Type BD Duplex, BQ or BQC Quadplex breaker (handle mounted) ^⑥

10

BRDL1

Padlockable device for locking the handle of the two center poles and the two outer poles of a two-pole Types BQ and BQC quadplex circuit breakers (escutcheon mounted) ^⑤

10

BRQLW

Padlockable device for locking the handle of main circuit breaker Types CC and CHH into the ON or OFF position (screw mounted) ^⑦

1

CCPL

Padlockable device for locking the handle of main breaker Types BW and CSR into the ON or OFF position (escutcheon Mounted) ^⑤

1

MCBPL

BHLW

Device used to secure handle in ON or OFF position for single-, two- or three-pole Type BR circuit breakers and single-pole of Type BD duplex and one independent outside pole of Type BQ or BQC Quadplex circuit breakers (escutcheon mounted) ^⑤

10

BHLW

Device used to secure handle in ON or OFF position for single-pole Type BR circuit breakers (handle mounted) ^⑥

10

BHLW1

BRLW2

Device used to secure handle in ON or OFF position for two- and three-pole Type BR circuit breakers (handle mounted) ^⑥

10

BHLW2



Device used to secure handle in ON or OFF position for single-pole Type GFCB ground fault circuit breakers (handle mounted) ^⑥

10

BHGW

Device used to secure handle in ON or OFF position for one independent outside pole of Types BQ and BQC Quadplex or single-pole Type BD duplex circuit breakers (handle mounted) ^⑥

10

HLW1

BREQS125

Hold-Down Kits ^⑧

Hold-down retainer kit for three-pole Type BR circuit breakers in S3100 and 3100R loadcenters only

1

BRHDB

Hold-down screw kit for two-pole Type BR circuit breakers in single-phase MLO loadcenters through 125A

1

BREQS125



Hold-down screw kit for two-pole Type BR circuit breakers in MLO loadcenters 150–225A (single-phase only)

1

BRHDK125

BRHDK125

Hold-down screw kit for two-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225A

1

BJHDS

Hold-down screw kit for three-pole Types BJ and BJH circuit breakers in MLO loadcenters 125–225A

1

BJHDS3P



Main Breaker Lug Kits

Types CC and CHH main breaker lug kit (2) 300 kcmil

1

CCL300

Types BW/CSR main breaker lug kit (2) 300 kcmil

1

MCBL300

Notes

- ① Must be purchased in multiples of ordering quantities indicated.
- ② Handle ties: typically used to join two similar independent single-pole breakers to form a two-pole noncommon trip breaker.
- ③ Handle lockoffs: devices that use a padlock to lock the circuit breaker's handle in the ON or OFF position.
- ④ See table on **Page V1-T1-82** for handle position changeability chart.
- ⑤ Escutcheon mounted: device mounted semipermanently to the face of the circuit breaker and secured by the loadcenter deadfront.
- ⑥ Handle mounted: device mounted directly to the handle by the use of a set screw.
- ⑦ Screw mounted: device permanently mounted to the face of the circuit breaker by the use of a non-removable screw.
- ⑧ Hold-down kits: devices used to secure the circuit breaker to the loadcenter for back-feed main application. See NEC Article 384.16(g).

BRML



Field Installation Kits and Parts, continued

Description	Ordering Quantity ^①	Catalog Number
Mechanical Interlocks		
Types BR for two-, three- and four-pole breakers	10	BRML
	10	BRPLOFF
	10	BRPLOFF2P
	10	BRPLOFF3P
	10	BJL2P
	10	BJL3P
	10	GHORLOFF2P
	10	GHORLOFF
	10	QCD123PLOFF

Shunt Trips, Auxiliary and Alarm Contacts

Description	Catalog Number ^② Suffix Adder
Shunt Trip for Types BW/CSR	
12 Volts	SR12
24 Volts	SR24
120 Volts	SR01
Shunt Trip for Types BR	
120 Volts	ST
Auxiliary Contact for Types BW/CSR	
1NO and 1NC	AL1
2NO and 2NC	AL2
Alarm Contacts for Types BW/CSR	
Types BW/CSR	CR1
Alarm Contacts for Type GFCB (Single-Pole)	
Alarm contact for GFCB (single-pole)	W1
1NO and 1NC	W2

Handle Position Changeability Chart

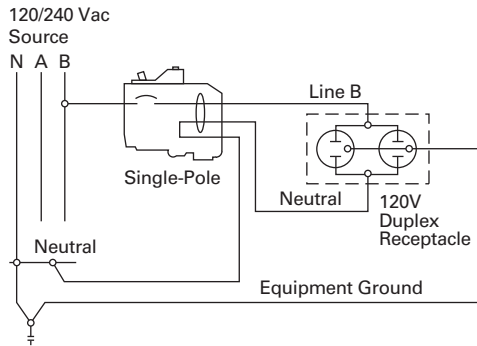
Handle Lockoff and Lockdog Types	To Change Handle Position from ON to OFF, or OFF to ON You Must...		
	Remove Padlock	Remove Device	Remove Loadcenter Deadfront
Lockoff escutcheon mounted	Remove	—	—
Lockoff handle mounted	Remove	Remove	—
Lockoff screw mounted	Remove	—	—
Lockdog escutcheon mounted	N/A	Remove	Remove
Lockdog handle mounted	N/A	Remove	—

Notes

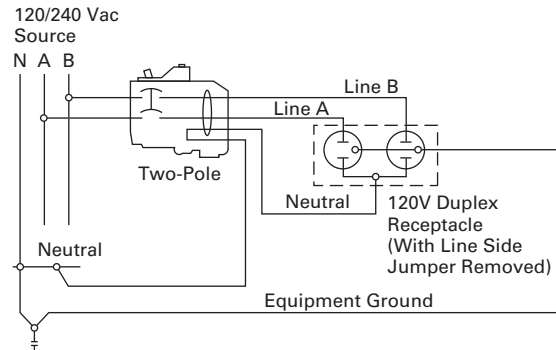
- ① Must be purchased in multiples of ordering quantities indicated.
- ② Add suffix indicated to end of breaker catalog number.

Wiring Diagrams

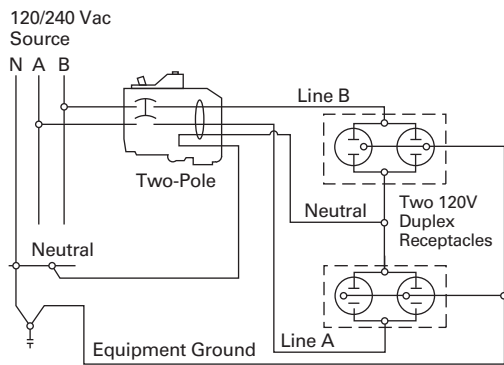
Single-Pole 120V Load Application Sourced by 120/240 Vac



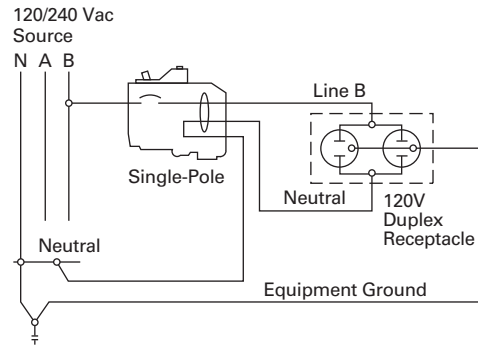
Two-Pole Shared Neutral with Duplex Receptacle Application



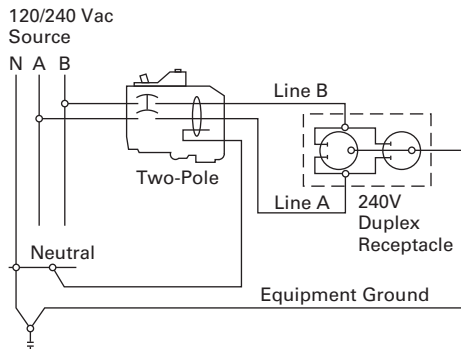
Two-Pole Shared Neutral with Multi-Duplex Receptacle Application



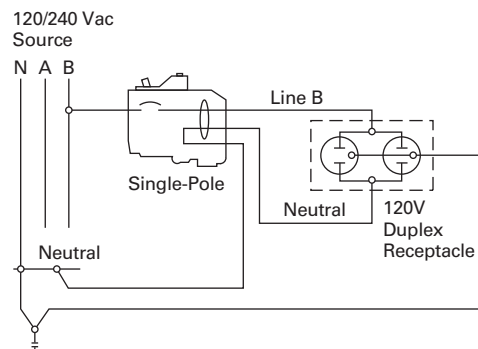
Single-Pole 120V Load Application Sourced by 120/240 Vac



Two-Pole 240V Load Application Sourced by 120/240 Vac



Single-Pole 120V Duplex Receptacle Application



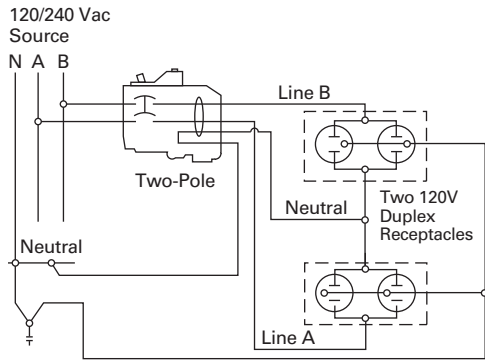
1.2

Loadcenters and Circuit Breakers

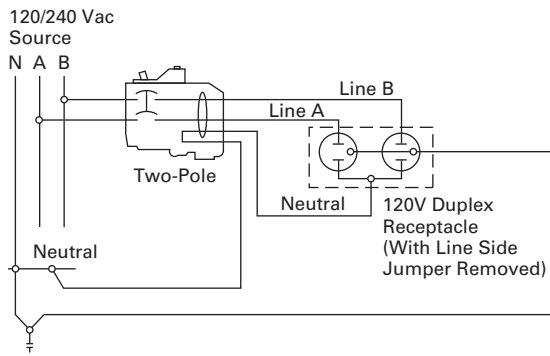
Type BR Loadcenters and Circuit Breakers

1

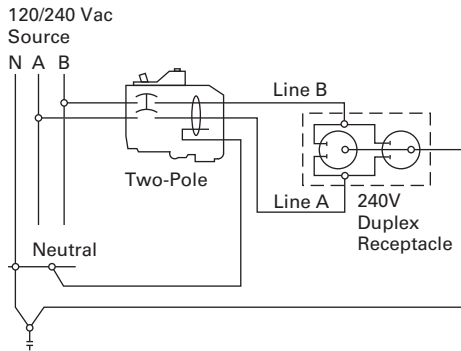
Two-Pole 120V Multi-Duplex Receptacle Application



Two-Pole 120V Duplex Receptacle Application



Two-Pole 240V Duplex Receptacle Application



OEM Loadcenters



Contents

Description

Standards and Certifications	Page V1-T1-86
Product Selection	V1-T1-86

Product Description

As a leader in the electrical distribution equipment business, Eaton has a unique product offering for equipment manufacturers, panel builders and virtually any OEM that has a need for power distribution within their equipment. The OEM interior offering consists of a wide variety of power distribution options utilizing components from Eaton’s CH and BR loadcenter product lines. With high-volume, standardized products, OEMs can expect to receive high-quality products covering configurations meeting virtually any power distribution need.

Coupled with Eaton’s expertise in circuit breaker design and manufacturing, OEM interiors provide solid power distribution and circuit protection in a compact, easy-to-install package. Interiors are offered from 2 to 42 circuits and from 70 to 225A.

Quality

Built in ISO 9002 certified manufacturing facilities, customers can be assured of the process quality in place for the manufacture of these products. Utilizing the latest in computer-controlled plating, painting, molding, stamping and welding processes, Eaton’s customers have come to expect consistent high-quality from shipment to shipment.

Two Products Offer Design Flexibility

As a manufacturer of two lines of loadcenters, Eaton is in a unique position to offer the broadest range of interiors in the market. Each line has its own unique characteristics that appeal to various segments of the market. OEM interiors are UL recognized components and are listed in either of the following UL files: E8741 or E52977.

The CH interiors feature 100% copper bus and use the CH 3/4-inch (19.1 mm) wide circuit breaker, which minimizes panel space. Recognized by contractors for its sturdy design, the CH interior will appeal to those customers seeking an industrial quality bolted bus bar and the space saving of 3/4-inch (19.1 mm) per bus stab. With a typical 12 circuit CH interior, this space savings amounts to an inch and a half savings over its 1-inch (25.4 mm) counterparts. The stab rating of the CH interiors is 140A maximum meaning that the handle rating of breakers mounted across from one another may not exceed 140A.

The BR interiors are manufactured of formed, plated aluminum or copper, and use Eaton’s Type BR 1-inch (25.4 mm) wide circuit breaker. This design affords customers the most circuit flexibility as many of these interiors allow the installation of standard single- and two-pole breakers as well as duplex (two poles in a 1-inch (25.4 mm) space) or quadplex (four poles in a 2-inch (50.8 mm) space) breakers.

The stab rating of the BR interiors is 200A maximum, meaning that the handle rating of the breakers that are mounted across from one another may not exceed 200A.

The interiors are designed for either horizontal (single-row breaker mounting), or vertical (double-row breaker mounting). To comply with National Electrical Code (NEC) requirements, if mounted horizontally, when the breaker is ON, the handle should be in the UP position. When mounted vertically, the handle toggles from left to right, so this is not a concern.

1

Standards and Certifications

Class CTL

National Electrical Code Paragraph 384-15 requires branch circuit panelboards to be provided with physical means to prevent the installation of more overcurrent devices than that number of which the enclosure was designed, rated and approved. Class CTL Duplex, Quadplex and twin breakers (identified by a catalog number prefix BD, BQ, BQC and CHT) are equipped with a UL listed rejection tab over the line terminal. All OEM interiors have appropriately notched stabs to accept these rejection tab Class CTL breakers.

Duplex, Quadplex and twin breakers manufactured without the rejection tab (identified by a catalog number prefix BR, BRD and CHNT) are available for replacement purposes in older interiors.

Federal Specifications

All loadcenter enclosures meet Federal Specifications W-P-115b, Type 1, Class 2 requirements.

All 120/240V breakers, both 1-inch (25.4 mm), 1/2-inch (12.7 mm) and 3/4-inch (19.1 mm) per pole meet the requirement of Federal Specifications W-C 375B/Gen Type 1.

Canadian Standards Association Listing

All single-pole and two-pole, 120/240V breakers, both 1-inch (25.4 mm), 1/2-inch (12.7 mm) and 3/4-inch (19.1 mm) per pole, 225A maximum, are listed as Certified by the Canadian Standards Association, Guide No. 69-11.19, Class 1432, File 18328.

Underwriters Laboratories Listing

All grounding bars manufactured comply with Underwriters Laboratories standards and are listed under Guide No. DHJR, File E31424, Volume W, Section 17.

All circuit breakers 10A and larger comply with the Underwriters Laboratories "Standard for Branch Circuit and Service Circuit-Breakers" UL 489; Guide No. 60 10.2 File E31424, and "Requirements for Wire Connectors and Soldering Lugs," UL 486B, Guide No. 461 10-C File E7830.

All Eaton breakers where marked, are suitable for use with 60/75°C rated wire, unless otherwise specified.

All devices comply with the 22 kAIC–10 kAIC UL series connected components File DKS2 of the Recognized Components Index.

Lighting and Appliance Panelboards

Lighting and appliance branch circuit panelboards are defined in NEC (Article 384) as "One having more than 10 percent of its overcurrent devices rated 30A or less for which neutral connections are provided." Article 384 also limits the number of overcurrent devices (branch circuit poles) to a maximum of 42 in any one cabinet. When the 42 poles are exceeded, two or more separate panels are required.

For more details and engineering drawings, see BR.31.02.S.E.



Product Selection

Type CH Loadcenter Interior Assemblies—Copper Bus

Ampere Rating	Maximum Number 1-Inch (24.5 mm) Spaces	Single Poles	UL File Reference	Main Terminal Size (Per Phase)	Standard Package Quantity	Catalog Number
Single-Phase Single Row Breaker Mounting—120/240 Vac, Three-Wire						
70	2	2	E8741	(1) #8–#2 AWG Cu/Al	1	CH9MB270
125	2	2	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH2L125INT
Single-Phase Double Row Breaker Mounting—120/240 Vac, Three-Wire						
125	4	4	E8741	(1) 2/0–#14 AWG Cu/Al	20	CH4L125INT
125	8	8	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH8L125INT
125	12	12	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH12L125INT
125	16	16	E8741	(1) 2/0–#6 AWG Cu/Al	20	CH16L125INT
200	12	12	E8741	(1) 300 kcmil–#4 AWG Cu/Al	20	CH12L200INT
200	16	16	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH16L200INT
225	24	24	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH24L225INT
225	32	32	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH32L225INT
225	42	42	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH42L225INT
Three-Phase Double Row Breaker Mounting—208Y/120 Vac, Four-Wire—240 Vac, Three-Wire—120/240 Vac, Four-Wire Delta						
125	12	12	E8741	(1) 2/0–#6 AWG Cu/Al	10	CH12L3125INT
125	18	18	E8741	(1) 2/0–#6 AWG Cu/Al	10	CH18L3125INT
125	24	24	E8741	(1) 2/0–#6 AWG Cu/Al	10	CH24L3125INT
225	24	24	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH24L3225INT
225	30	30	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH30L3225INT
225	42	42	E8741	(1) 300 kcmil–#4 AWG Cu/Al	10	CH42L3225INT

BR Loadcenter Interior Assembly



Type BR Loadcenter Interior Assemblies—Aluminum Bus

Ampere Rating	Maximum Number 1-Inch (24.5 mm) Spaces	Single Poles	UL File Reference	Main Terminal Size (Per Phase)	Standard Package Quantity	Catalog Number
Single-Phase Single Row Breaker Mounting—120/240 Vac, Three-Wire						
70	2	4	E8741	(1) #8-#2 AWG Cu/Al	20	24INT70B
125	2	4	E8741	(1) 1/0-#14 AWG Cu 2/0-12 AWG Al	20	24INT125B
125	6	12	E52977	(1) 2/0-#14 AWG Cu/Al	20	612INT125SRB
Single-Phase Double Row Breaker Mounting—120/240 Vac, Three-Wire						
125	4	8	E8741	(1) 2/0-#14 AWG Cu/Al	20	48INT125B
125	6	12	E8741	(1) 2/0-#14 AWG Cu/Al	20	612INT125B
125	8	16	E8741	(1) 2/0-#14 AWG Cu/Al	20	816INT125B
125	12	12	E52977	(1) 2/0-#14 AWG Cu/Al	20	1212INT125B
125	12	24	E52977	(1) 2/0-#14 AWG Cu/Al	20	1224INT125B
125	16	24	E52977	(1) 2/0-#14 AWG Cu/Al	20	1624INT125B
125	20	24	E52977	(1) 2/0-#14 AWG Cu/Al	10	2024INT125B
125	24	24	E52977	(1) 2/0-#14 AWG Cu/Al	10	2424INT125B
200	8	16	E52977	(1) 300 kcmil-#1 AWG Cu/Al	20	816INT200B
200	12	24	E52977	(1) 300 kcmil-#1 AWG Cu/Al	20	1224INT200B
200	30	40	E52977	(1) 300 kcmil-#1 AWG Cu/Al	10	3040INT200B
225	42	42	E52977	(1) 300 kcmil-#1 AWG Cu/Al	10	4242INT225B
Three-Phase Double Row Breaker Mounting—208Y/120 Vac, Four-Wire—240 Vac, Three-Wire—120/240 Vac, Four-Wire Delta						
125	12	24	E52977	(1) 2/0-#8 AWG Cu/Al	10	1224INT3125B
150	18	36	E52977	(1) 300 kcmil-#2 AWG Cu/Al	10	1836INT3150B
150	24	42	E52977	(1) 300 kcmil-#2 AWG Cu/Al	10	2442INT3150B
200	30	42	E52977	(1) 300 kcmil-#2 AWG Cu/Al	10	3042INT3200B
225	42	42	E52977	(1) 300 kcmil-#2 AWG Cu/Al	10	4242INT3225B

Type BR Loadcenter Interior Assemblies—Copper Bus

Ampere Rating	Maximum Number 1-Inch (24.5 mm) Spaces	Single Poles	UL File Reference	Main Terminal Size (Per Phase)	Standard Package Quantity	Catalog Number
Single-Phase Double Row Breaker Mounting—120/240 Vac, Three-Wire						
125	8	16	E5297	(1) 2/0-#14 AWG Cu/Al	20	816INT125BC
125	12	12	E5297	(1) 2/0-#14 AWG Cu/Al	20	1212INT125BC
200	12	24	E5297	(1) 300 kcmil-#1 AWG Cu/Al	20	1224INT200BC
Three-Phase Double Row Breaker Mounting—208Y/120 Vac, Four-Wire—240 Vac, Three-Wire—120/240 Vac, Four-Wire Delta						
125	12	24	E52977	(1) 2/0-#8 AWG Cu/Al	10	1224INT3125BC
200	12	24	E52977	(1) 300 kcmil-#2 AWG Cu/Al	10	1224INT3200BC

1.3

Loadcenters and Circuit Breakers

Loadcenter Interiors/OEM Loadcenters

1

Neutral Assemblies

Ampere Rating	UL File Rating	Main Incoming Terminal Wire Size Range 60°C or 75°C	Number of Terminals		Standard Package Quantity	Figure	Dimensions—Inches (mm)		Catalog Number
			#14–4 AWG Cu/Al	#6–1/0 AWG Cu #6–2/0 AWG Al			Overall Length A	Mounting B	
125	E52977	#6–1/0 AWG Cu #6–2/0 AWG Al	10	—	20	1	5.938 (150.83)	5.400 (137.16)	10NEU125B
125	E52977	#6–1/0 AWG Cu #6–2/0 AWG Al	17	—	20	1	8.388 (213.06)	7.850 (199.40)	17NEU125B
125	E52977	#6–1/0 AWG Cu #6–2/0 AWG Al	20	—	20	1	9.438 (239.73)	8.900 (226.06)	20NEU125B
225	E52977	#1–300 kcmil Cu/Al	24	1	20	2	10.913 (277.19)	10.300 (261.62)	24NEU225B
225	E52977	#1–300 kcmil Cu/Al	35	1	20	2	15.813 (401.65)	15.200 (386.08)	35NEU225B
125	—	—	4	2	1	3	2.266 (57.56)	0.594 (15.09)	BINA

Figure 1

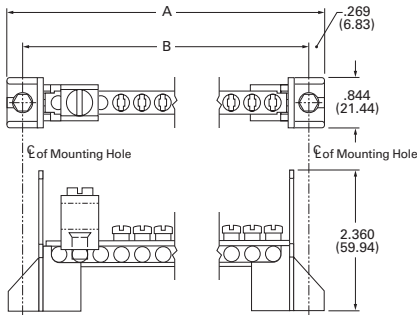


Figure 2

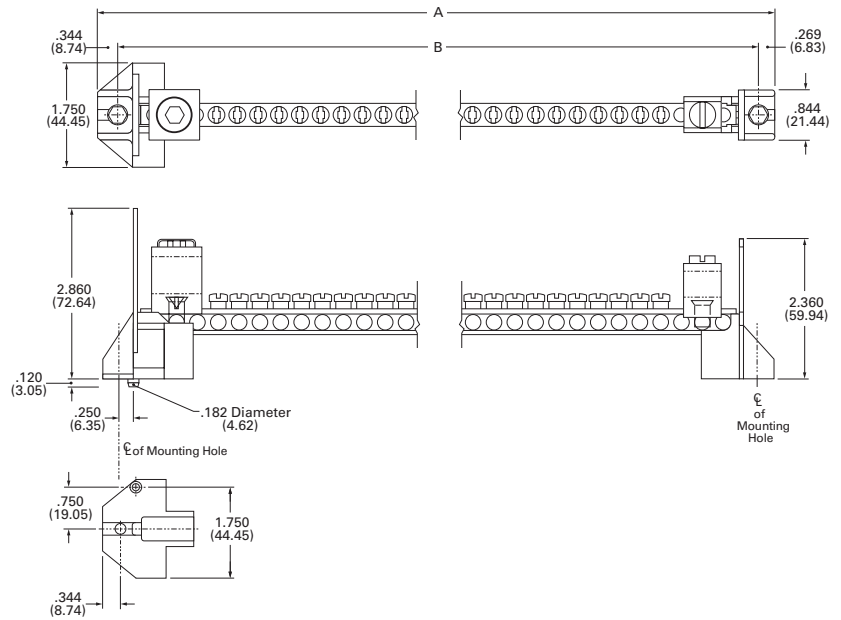
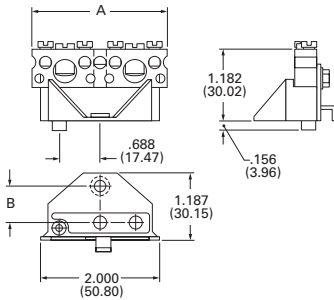


Figure 3



Add-on Lugs for Neutral Assemblies

Description	Wire Size Range Cu/Al 60°C or 75°C	Ordering Quantity ^①	Catalog Number
Neutral/ground lug	#2/0 maximum	1	NL20
Add-on neutral or ground lug	#3/0 maximum	1	NL30
	300 kcmil maximum	1	NL300

GBK14



BRGBK39512



Ground Bar Kits

Description (See Legend)	Length Inches (mm)	Ordering Quantity ^①	Catalog Number
●○○○○●	2.54 (64.5)	1	GBK5 ^②
●○○○○●■	3.59 (91.2)	1	GBK520 ^②
●○○○○●○○○○	4.29 (109.0)	1	GBK10 ^②
●○○○○●○○○○■	5.34 (135.6)	1	GBK1020 ^②
○○○○○■○○○○○	4.61 (117.1)	1	GBK13 ^②
●○○○○●○○○○○○○○	5.69 (144.5)	1	GBK14 ^②
●○○○○●○○○○○○○○■	6.74 (171.2)	1	GBK1420 ^②
●○○○○●○○○○○○○○○○○○	8.14 (206.8)	1	GBK21 ^②
●○○○○●○○○○○○○○○○○○■	9.19 (233.4)	1	GBK2120 ^②
○○○○○■○○○○○■○○○○○■	5.78 (146.8)	1	BRGBK39512 ^{③④}

Ground Bar Legend

- (3) #14–10 Cu/Al or (1) #14–4 Cu/Al
- (1) #6–2/0 Cu/Al
- (1) #14–1/0 Cu/Al or (3) #14–10 Cu/Al
- ◐ (1) #14–6 Cu/Al or (2) #14–12 Cu/Al
- Mounting Hole

Notes

- ^① Must be purchased in multiples of ordering quantities indicated.
- ^② Distance between mounting holes is 1.75 inches (44.5 mm).
- ^③ For single- and three-phase 400 and 600A applications.
- ^④ Distance between mounting holes is 2.34 inches (59.5 mm).

Enclosed Breakers



Contents

Description	Page
Product Selection	V1-T1-91

Product Overview

Eaton enclosed breakers offer all the advantages of circuit breakers packed in an enclosure for 240 Vac applications and include a wide range of accessories.

Product Description

- 100–225A, 240 Vac maximum
- NEMA 1 general purpose—surface or flush mounting
- NEMA 3R rainproof surface mounting

Standards and Certifications

- UL 489
- CSA 22.2
- NEMA 250



Product Selection

Single-Phase Circuit Breaker Enclosures—10/25/35 kAIC

Circuit Breaker Unit Enclosures



Type ECB Circuit Breaker Enclosure—Includes Lug Kit

Main Ampere Rating	Unit Enclosure Type	Mounting	Type of Circuit Breaker	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number
Single-Phase Three-Wire—240 Vac Maximum					
150	Outdoor	—	CSR (included) ①	④	ECB150RB ③⑥⑦
200	Outdoor	—	CSR (included) ②	④	ECB200RB ③⑥⑦
225	Indoor	Flush	BW, CSR ③, CSH	④	ECB225F ③⑥⑦
	Indoor	Surface	CSR ③	④	ECB225S ③⑥⑦
	Outdoor	—	CSR ③	④	ECB225R ③⑥⑦

CSR2200N



Circuit Breakers 120/240 Vac—25 kAIC For Use in Type ECB Enclosures

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Two-Pole Breakers Catalog Number	
		10 kAIC	25 kAIC
100	#2–300 kcmil	—	CSR2100N
125	#2–300 kcmil	BW2125	CSR2125N
150	#2–300 kcmil	BW2150	CSR2150N
175	#2–300 kcmil	BW2175	CSR2175N
200	#2–300 kcmil	BW2200	CSR2200N
225	#2–300 kcmil	BW2225	CSR2225N

Shunt Trips

Type	Volts	Catalog Number Suffix Adder ⑥
CSR	12	SR12
CSR	24	SR24
CSR	120	SR01

Lug Kit for Replacement Purposes Only For Use in Type ECB Enclosures

Ampere Rating	Description	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Catalog Number
225	For use on 125, 150, 175, 200 and 225A breakers	#2–300 kcmil	MCBK225

Wire Data

Wire/Application	Maximum Wire Size	Maximum Ampere Rating
Aluminum—standard	250 kcmil	200
Aluminum—service entrance	250 kcmil	225
Copper—standard and service entrance	250 kcmil	225

Shunt Trips, Auxiliary and Alarm Contacts

Description	Catalog Number Suffix Adder ⑥
Shunt Trip for Types BW/CSR	
12V	SR12
24V	SR24
120V	SR01
Auxiliary Contact for Types BW/CSR	
1NO and 1NC	AL1
2NO and 2NC	AL2
Alarm Contacts for Types BW/CSR	
Types BW/CSR	CR1
Alarm Contacts for Type GFCB (Single-Pole)	
Alarm contact for GFCB (single-pole)	W1
1NO and 1NC	W2

Notes

- CSR2150N factory-installed circuit breaker.
 - CSR2200N factory-installed circuit breaker.
 - Order circuit breaker separately.
 - Wire size is determined by the circuit breaker installed in enclosure. Maximum wire size and ampere rating is determined by Wire Data table above.
 - Rainproof panels are furnished with hub closures plates. For rainproof hubs, refer to **Page V1-T1-25**.
 - One ground lug accepting (1) #14—#2 is factory installed. Also, there are pre-drilled holes to accept a GBK5 ground bar.
 - Approved for service entrance.
 - Add suffix indicated to end of breaker catalog number.
- Box sizes **Pages V1-T1-27** and **V1-T1-28**.

1.4

Loadcenters and Circuit Breakers

Enclosed Breakers

1

Single-Phase and Three-Phase Circuit Breaker Enclosures—10/25 kAIC

ECC225S



Type ECC Circuit Breaker Enclosure—Order Type CC Circuit Breaker Separately

Main Ampere Rating	Unit Enclosure Type	Mounting Type	Circuit Breaker Type	Wire Size Range Cu/Al 60°C or 75°C	Catalog Number
Single- and Three-Phase—240 Vac Maximum					
225	Indoor	Flush	CC/CCV/CCH	⑤	ECC225F ①②③
225	Indoor	Surface	CC/CCV/CCH	⑤	ECC225S ①②③
225	Outdoor	—	CC/CCV/CCH	⑤	ECC225R ①②③④

CCV2200



Circuit Breaker 240 Vac for Use in Type ECC Enclosures

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C for Line Terminals	Type CCV and CC 10 kAIC Catalog Number	Type CCVH/CCH 25 kAIC Catalog Number ⑥
Two-Pole			
100	#4–4/0	CCV2100	CCVH2100
125		CCV2125	CCVH2125
150		CCV2150	CCVH2150
175	#2/0–300 kcmil	CCV2175	CCVH2175
200		CCV2200	CCVH2200
225		CCV2225	CCVH2225
Three-Pole			
100	#4–4/0	CC3100	CCH3100
125		CC3125	CCH3125
150		CC3150	CCH3150
175	#2/0–300 kcmil	CC3175	CCH3175
200		CC3200	CCH3200
225		CC3225	CCH3225

Shunt Trips and Auxiliary Contacts ⑥

Description Type	Volts	Catalog Number Suffix Adder ⑦
Shunt Trip		
CC	12 DC	SR12
CC	24 DC	SR24
CC	120 AC	SR01
CC	208 AC	SR08
CC	240 AC	SR02
CCV	48–127 AC/48–60 DC	SR01
CCV	9–24 AC/12–24 DC	SR24
Auxiliary Contact		
CC 1N0 and 1NC	—	AL1

Wire/Application Chart

Wire/Application	Maximum Wire Size	Maximum Ampere Rating
Aluminum—standard	250 kcmil	200
Aluminum—service entrance	250 kcmil	225
Copper—standard and service entrance	250 kcmil	225

Notes

- ① Order circuit breaker separately.
- ② One ground lug accepting (1) #14–#2 is factory installed. Also, there are pre-drilled holes to accept a GBK5 ground bar.
- ③ Approved for service entrance.
- ④ Rainproof panels are furnished with hub closures plates. For rainproof hubs, refer to **Page V1-T1-63**.
- ⑤ Wire size is determined by the circuit breaker installed in enclosure. Maximum wire size and ampere rating is determined by the Wire/Application Chart.
- ⑥ CCV breakers are two-pole only.
- ⑦ Add suffix indicated to end of breaker catalog number.
- ⑧ Series ratings are not available for CCH or CCVH breakers.

Box sizes **Pages V1-T1-64** through **V1-T1-66**.

Classified Breakers



Contents

Description

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Product Description

Eaton UL classified Replacement Circuit Breakers are available in both 3/4-inch Type CHQ and 1-inch Type CL, single- and two-pole configurations. These breakers are classified as direct replacements by Underwriters Laboratories. In addition to a UL listing, they also come with a 15-year warranty.

Specified vs. UL Classified

Specified breakers are listed by the manufacturer of the panelboard for use in a particular panel. This doesn't mean that the panelboard manufacturer produced the specified breaker; it merely means that the panelboard manufacturer has tested the breaker in the panel. In fact, through the years, Eaton has manufactured thousands of breakers for other panelboard manufacturers.

UL classified breakers are produced by one manufacturer for use in place of the breakers specified on the panelboard. Like specified breakers, UL classified breakers have been tested in the panels for which they are approved.

Testing

Classified breakers are tested extensively in numerous General Electric®, Siemens®, Murray®, Thomas & Betts®, Square D®, and Crouse-Hinds® panels. The tests are conducted with witnesses from Underwriters Laboratories Inc. and involve short-circuit, temperature, and insertion/withdrawal applications. This level of testing ensures that the breakers meet identified standards and have been found suitable by UL for the specified purpose.

Understanding Classified Breaker Terminology

Definitions

Specified circuit breaker—each manufacturer lists the brands of circuit breakers that can be used in their panelboards. Often, manufacturers will not list competitors as specified, even though they are suitable replacements.

Classified circuit breaker—a breaker that is considered suitable, by a qualified third-party organization, for use in another manufacturer's panelboard.

Listed breaker—the listing of a circuit breaker is by an independent third party. Eaton classified breakers are listed by UL.

Labeled breaker—a breaker with a label affixed by an independent third party.

1

Product Selection



Type CHQ Replacement Breakers for Square D Type QO Loadcenters

10 kAIC, 120 and 120/240 Vac

CHQ120 CHQ230



Type CHQ Classified Breakers 3/4-Inch (19.1 mm) per Pole 120 or 120/240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	 Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton		 Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton	
		Catalog Number	Catalog Number		
15	(1) #14–8 (2) #14–10	CHQ115	CHQ215		
20		CHQ120	CHQ220		
25		CHQ125	CHQ225		
30		CHQ130	CHQ230		
35		CHQ135	CHQ235		
40		CHQ140	CHQ240		
45		CHQ145	CHQ245		
50		CHQ150	CHQ250		
60		—	CHQ260		

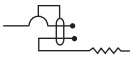

Type CHQ Ground Fault and Arc Fault Replacement Breakers for Square D Type QO Loadcenters

10 kAIC, 120 and 120/240 Vac

CHQ115GF CHQ220GF



Type CHQ Ground Fault Breakers—5 Milliampere— 3/4-Inch (19.1 mm) per Pole, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C	 Single-Pole 120 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton		 Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton	
		Catalog Number	Catalog Number		
15	(1) #14–8 (2) #14–10	CHQ115GF	CHQ215GF		
20		CHQ120GF	CHQ220GF		
25		CHQ125GF	CHQ225GF		
30		CHQ130GF	CHQ230GF		
35		—	CHQ235GF		
40		—	CHQ240GF		
45		—	CHQ245GF		
50		—	CHQ250GF		

Type CHQ Surge Arrester

Catalog Number


CHQSA

Type CL Replacement Breakers for Square D HOMELINE, General Electric, Crouse-Hinds, Thomas & Betts, Murray and ITE®/Siemens Loadcenters

CL_

Type CL Breakers, 1-Inch (25.4 mm) per Pole, 10 kAIC




Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C		
		Single-Pole 120/240V Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240V Common Trip Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton Catalog Number
15	#14-4	CL115	CL215
20	#14-4	CL120	CL220
25	#14-4	CL125	CL225
30	#14-4	CL130	CL230
35	#14-4	CL135	CL235
40	#14-4	CL140	CL240
45	#14-4	CL145	CL245
50	#14-4	CL150	CL250

CL_AF

Type CL Classified Arc and Ground Fault Breakers (5 Milliampere), 1-Inch (25.4 mm) per Pole, 10 kAIC




Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C		
		Single-Pole 120/240V Requires One 1-Inch (25.4 mm) Space 1 per Shelf Carton Catalog Number	
Arc Fault Breakers			
15	#14-4	CL115AF	
20	#14-4	CL115CAF	
20	#14-4	CL120AF	
20	#14-4	CL120CAF	
Ground Fault Breakers			
15	#14-4	CL115GF	
20	#14-4	CL120GF	
30	#14-4	CL130GF	

CLR_

Type CL Classified Latching Remote Control Smart Breakers™, 1-Inch (25.4 mm) per Pole, 10 kAIC



Ampere Rating	Wire Size Range Cu/Al 60°C or 75°C		
		Single-Pole 120V Requires One 1-Inch (25.4 mm) Space 10 per Shelf Carton Catalog Number	Two-Pole 120/240V Common Trip Requires Two 1-Inch (25.4 mm) Spaces 5 per Shelf Carton Catalog Number
15	(2) #14-10	CLRP115	CLRP215
20	(2) #14-10	CLRP120	CLRP220
25	(1) #8-6	CLRP125	CLRP225
30	(1) #8-6	CLRP130	CLRP230

Accessories

CHQ Breaker Accessories

Description	Catalog Number
Breaker handle lock	CHLO

Technical Data

Arc Fault Application Notes

An arc fault circuit interrupter is a device intended to provide protection from the effects of arc faults by recognizing characteristics unique to arcing and by functioning to de-energize the circuit when the arc fault is detected. As of January 1, 2002, the National Electrical Code (NEC) requires all branch circuits that supply 125V, single-phase, 15 and 20A receptacle outlets installed in dwelling unit bedrooms shall be protected by an arc fault circuit interrupter(s). This includes ceiling lighting (recessed, ceiling fans, etc.) as well as smoke detectors and all other bedroom outlets. The 2005 NEC introduced the application of the Combination Type AFCI for bedroom circuits required as of January 1, 2008. The 2008 NEC expands this application to other living areas.

Ground Fault Application Notes

Single-pole GFCBs are designed for use in two-wire, 120 Vac circuits. Drawing on **Page V1-T1-97** shows a typical wiring configuration.

Two-pole GFCBs are designed for use in three-wire, 120/240 Vac circuits, 120 Vac multiwire circuits employing common, neutral and two-wire, 240 Vac circuits obtained from a 120/240 Vac source.

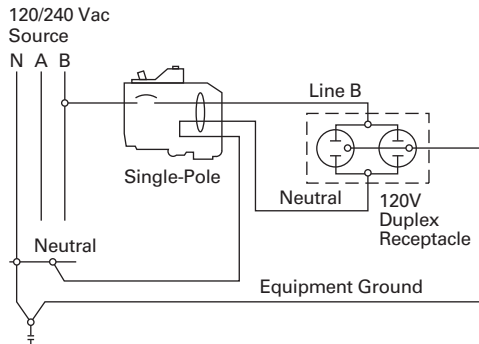
Drawings on **Page V1-T1-97** illustrate typical wiring configurations for 120/240 Vac multiwire circuits.

Drawing on **Page V1-T1-97** depicts a 240 Vac, two-wire circuit. Note the “panel neutral” conductor connects to the neutral bar, even though the neutral is not included in the load circuit. This connection is necessary to supply a 120 Vac power source to the ground fault sensing circuit.

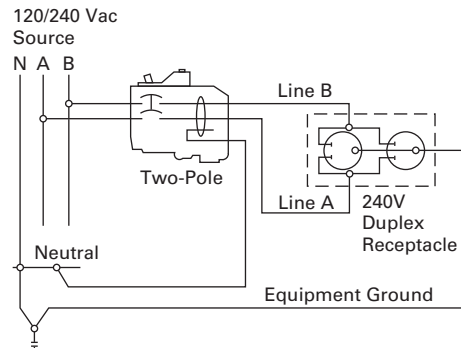
The figures are shown with a 120/240 Vac, single-phase, three-wire power source, but are also applicable to a 120/208 Vac, three-phase, four-wire power supply. For all figures, the electrical operation of the GFCB is not affected by the equipment ground.

Wiring Diagrams

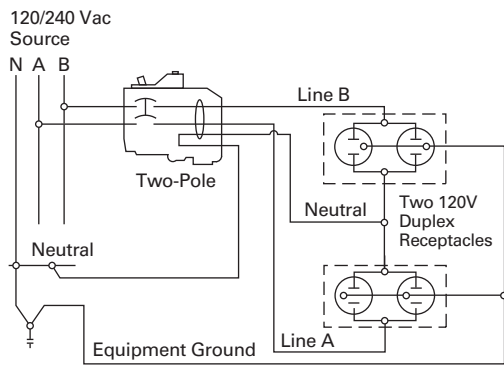
Single-Pole 120V Load Application Sourced by 120/240 Vac



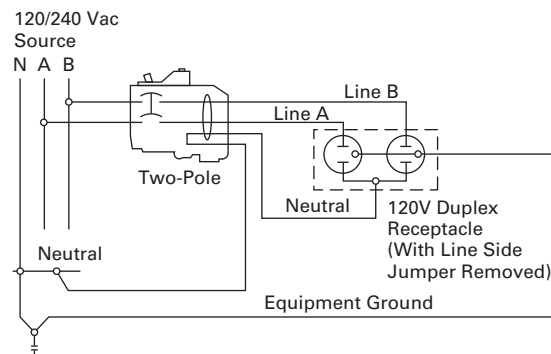
Two-Pole 240V Load Application Sourced by 120/240 Vac



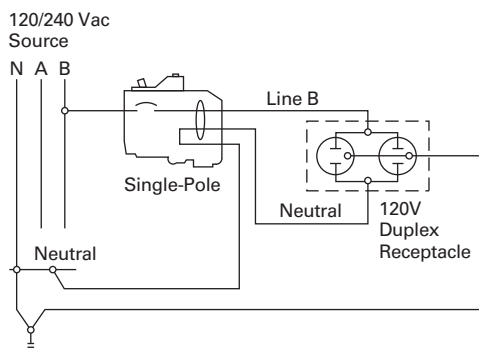
Two-Pole Shared Neutral with Multi-Duplex Receptacle Application



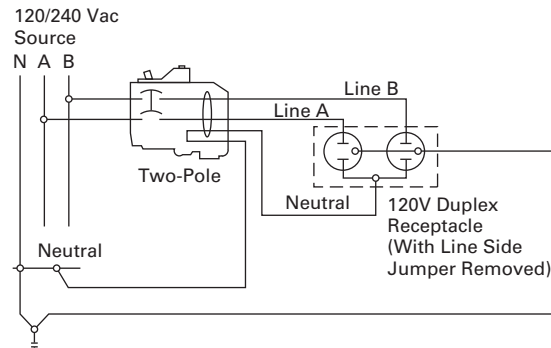
Two-Pole Shared Neutral with Duplex Receptacle Application



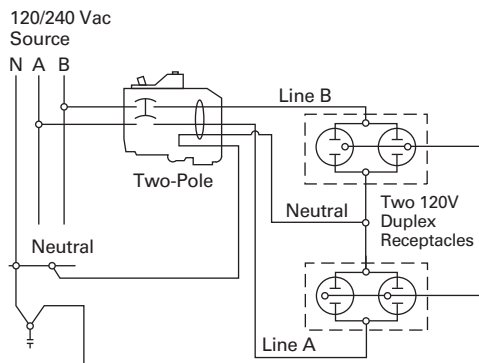
Single-Pole 120V Duplex Receptacle Application



Two-Pole 120V Duplex Receptacle Application



Two-Pole 120V Multi-Duplex Receptacle Application



Two-Pole 240V Duplex Receptacle Application

