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# **Overview**

# **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 150 A maximum on the 100 and 125 A loadcenters, and 200 A on loadcenters with 150 A 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 (subpanel) 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 retighten 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 nonservice 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-T1-68**.

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

#### **Bottom Fed Loadcenters**

For single-phase 225 A 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 "!" 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

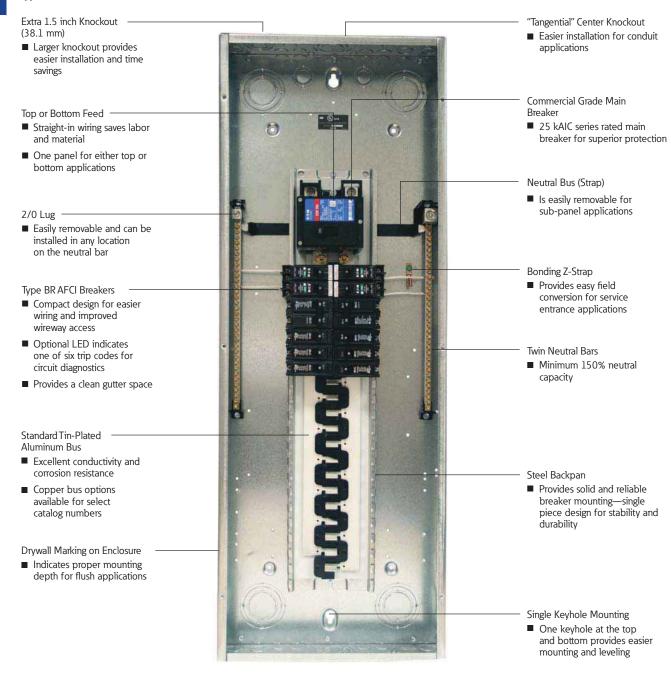
#### Standards and Certifications

### **UL Listings**

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



### Type BR Loadcenter

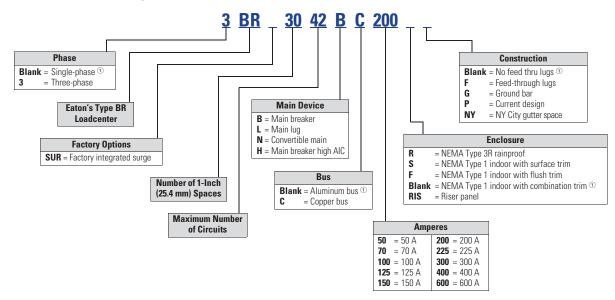


# Warranty

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

# **Catalog Number Selection**

# Single- and Three-Phase Through 600 A



### Note

No character space used.

### **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	Maximun 1-Inch (25 Spaces	n Number 5.4 mm) Circuits	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
BR	100	8	16	Indoor	B1	#4-1/0 ②	BR816B100
10 kAIC	100	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
	125	16	24	Indoor	C1	#4-2/0	BR1624B125
		20	24	Indoor	C1		BR2024B125
		20	24	Outdoor	C3R		BR2024B125R 4
		30	30	Indoor	D1		BR3030B125
BRH <sup>®</sup> 22 kAIC	100	20	24	Indoor	C2	#4-1/0	BR2024H100 <sup>®</sup>
CSR ®	150	8	16	Outdoor	C3R	#2-300 kcmil	BR816B150RF 34
25 kAIC		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	<del></del>	BR3040B150
	200	4	8	Outdoor	8R	#2-300 kcmil	BR48B200RF 3 7 8
		8	16	Outdoor	C3R		BR816B200RF 34
		16	32	Indoor	C4	<del></del>	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	<del></del>	BR4040B200R 4
		40	40	Indoor	L1		BR4040B200
		40	50	Indoor	L1	<del></del>	BR4050B200
		60	120	Indoor	L3	<del></del>	BR60120B200
		60	120	Outdoor	L3R	<del></del>	BR60120B200R
	225	42	42	Indoor	L2	#1-250 kcmil	BR4242B225
		42	42	Outdoor	L2R		BR4242B225R 4

### Notes

- ① Combination style covers may be used in surface or flush applications.
- $^{\scriptsize (2)}$  Wire range size for BR1020B100SP is #6–#1 Cu/Al.
- ③ Includes through-feed lugs for both phase and neutral conductors.
- Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to Page V1-T1-68.
- 22 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFTCB 10 kAIC branch breakers are used in series with Type BRH main breaker.
  25 kAIC series combination rating is obtained when Types BD, BR, BQ, BQC and GFTCB 10 kAIC branch circuit breakers are used in series with Type CSR main breaker.
- Supplied with adapter plate to use DS Group1 hubs on Page V1-T1-68. If 2.50-inch (63.5 mm) hub is needed, remove adapter and use ARP00007CH25 hub.
- Supplied with adapter place to day by cloudy made with 11-30. In 2.30-min (03.5 min) made is needed, remove adapter
  Neutral is bonded—suitable for service entrance only—cannot be converted for sub-feed application.
- $\ ^{\textcircled{\scriptsize 9}}$  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-T1-68.

### Main Circuit Breaker Loadcenters—10/22 kAIC

#### B4242DFN

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



Main	Main	Maximum Number Main 1-Inch (25.4 mm)				Wire Size Range	Commercial Loadcenter Catalog Number 123	
Breaker Type	Ampere Rating	Spaces	Circuits	Enclosure Type	Box Size	Cu/Al 60 °C or 75 °C for Main Breaker	With Flush or NEMA Type 3R Cover	With Surface Cover
DK @	300	42	42	Indoor	24	(2) #3/0-250 kcmil	BR4242B300F	BR4242B300S
	400	42	42	Indoor	24	(2) #3/0-250 kcmil	BR4242B400F	BR4242B400S
		42	42	Outdoor	47	(2) #3/0-250 kcmil	BR4242B400R ®	_
HLD ®	600	42	42	Indoor	24	(2) #3/0-500 kcmil	_	BR4242B600S

#### Notes

- ① Ground bar kits priced separately. See Page V1-T1-68.
- @ 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.
- Type DK main circuit breaker is rated 65 kAlC at 240 Vac and allows a 22 kAlC series rating on the panel when Types BR, BD and BJ branch circuit breakers are used.
- ® Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to Page V1-T1-68.
- ® 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-T1-73 through V1-T1-76.

Please contact the Lincoln Flex Center for any configurations not listed.

### Single-Phase—Main Lug Loadcenters

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

	Main	Maximum 1-Inch (25.4		Enclosure	Box	Wire Size Range Cu/Al 60 °C or 75 °C	Loadcenter Catalog Number with Combination or
	Ampere Rating	Spaces	Circuits	Туре	Size	for Main Lugs	NEMA Type 3R Cover ①
BR1224L125	125	12	12	Indoor	B1	#6-2/0	BR1212L125 2345
	in .	12	24	Indoor	B1		BR1224L125 245
		12	24	Indoor	B1		BR1224L125G 245
		12	24	Indoor	B1		BR1224L125DG 2456
		12	24	Outdoor	B1R		BR1224L125R 257
	ļ.	16	16	Indoor	B2		BR1616L125 245
		16	24	Indoor	B2		BR1624L125 24
		16	24	Indoor	B2		BR1624L125G @4
		16	24	Outdoor	B2R		BR1624L125R 27
		20	20	Indoor	C1		BR2020L125 246
		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
	150	16	30	Indoor	C2	#1-300 kcmil	BR1630L150 @9
		20	30	Indoor	C2		BR2030L150 @®
1224L200	200	8	16	Outdoor	B2R	#1-300 kcmil	BR816L200RF 500
	e e	12	24	Indoor	B2		BR1224L200 @ 6 9
1-	2	12	24	Outdoor	B2R		BR1224L200R 579
		20	40	Indoor	C2		BR2040L200 49
	l .	20	40	Indoor	C2		BR2040L200G 489
		20	40	Outdoor	C3R		BR2040L200R 79
	P	24	40	Indoor	C4		BR2440L200 @9
		30	40	Indoor	D1		BR3040L200 49
		30	40	Indoor	D1		BR3040L200G 489
		30	40	Outdoor	D1R		BR3040L200R @
		40	40	Indoor	G1		BR4040L200 49
		40	40	Indoor	G1		BR4040L200G 49
		40	40	Outdoor	G1R		BR4040L200R 79
		60	120	Indoor	L3	<del></del>	BR60120L200 <sup>①</sup>
	225	42	42	Indoor	L1	#1-300 kcmil	BR4242L225 @
		42	42	Outdoor	L1R		BR4242L225R ①

### Notes

- ① Ground bar kits priced separately unless otherwise noted. See Page V1-T1-68.
- $\ensuremath{@}$  Has notch for BREQS125 hold-down kit.
- 3 Single, movable neutral is provided.
- 4 Combination cover style.
- 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.
- <sup>©</sup> Ground bars GBK5 and GBK520 installed.
- Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to Page V1-T1-68.
- ® Ground bar GBK1220 installed.
- (9) Has notch for BRHDK125 hold-down kit.
- Includes through-feed lugs for both phase and neutral conductors.
- 10 Includes main lugs. Loadcenters can convert to main breaker using kit.

# Loadcenters and Circuit Breakers

1.2

Type BR Loadcenters and Circuit Breakers

1

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

### 4242DFN



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

	Maximum 1-Inch (25.				Wire Size Range	Commercial Loadcente Catalog Number ①②③	r
Main Ampere Rating	Spaces Circui		Enclosure Type	Box Size	Cu/Al 60 °C or 75 °C for Main Lugs	With Flush or NEMA Type 3R Cover	With Surface Cover
400	12	24	Outdoor	42	(2) #3/0-400 kcmil	BR1224L400R 4 5	_
	42	42	Indoor	22		BR4242L400F	BR4242L400S
	42	42	Outdoor	46		BR4242L400R 4	_
600	42	42	Indoor	22	(2) #2-500 kcmil	_	BR4242L600S

#### Notes

- $^{\scriptsize\textcircled{1}}$  Ground bar kits priced separately unless otherwise noted. See Page V1-T1-68.
- ② Has notch for BRHDK125 hold-down kit.
- 3 Ground bar GBK8 installed.
- @ Rainproof panels are furnished with hub closure plates. For rainproof hubs, refer to Page V1-T1-68.
- ® 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.

1

# DS300H2

# **Field Installation Rainproof Conduit Hubs**



Description	Conduit Size Inches (mm)	Ordering Quantity <sup>①</sup>	Catalog Number
Group 1—for use with 70, 100 and 125 A MLO and MCB loadcenters and circuit breaker enclosures and the	0.75 (19.1)	1	DS075H1
following 150 and 200 A panels: BR48B200RF	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 225 A MLO and MCB loadcenters and circuit breaker enclosures except for	2.00 (50.8)	1	DS200H2
the following 200 A loadcenters: BR48B200RF. Also for use with 400 and 600 A loadcenters and New York City oadcenters manufactured after November 1, 2005	2.50 (63.5)	1	DS250H2
5000011010 Hallidata 60 01.01 NOTOHIDO 17, 2000	3.00 (76.2)	1	DS300H2
Type H conduit hubs for loadcenters PL0724R and S3100RN	0.75 (19.1)	1	RH75P
	1.00 (25.4)	1	RH100P
	1.25 (31.8)	1	RH125P
	1.50 (38.1)	1	RH150P
Adapter kit—Allows Installing a Group 1 hub on devices arranged for Group 2 hubs	_	1	DS900AP
Group 1 small blank hub plate with bump	_	1	DS900CP1
Group 2 Large blank hub plate with bump	_	1	DS900CP2

### GBK14

# **Ground Bar Kits**



### BRGBK39512



Description See Legend)	Length Inches (mm)	Ordering Quantity <sup>①</sup>	Catalog Number
●0000●0	2.54 (64.5)	1	GBK5 ②
●0000●0■	3.59 (91.2)	1	GBK520 ②
●0000●000000	4.29 (109.0)	1	GBK10®
●0000●000000■	5.34 (135.6)	1	GBK1020 <sup>②</sup>
000000000000	4.61 (117.1)	1	GBK13®
●0000●000000000	5.69 (144.5)	1	GBK14®
●0000●000000000■	6.74 (171.2)	1	GBK1420 <sup>②</sup>
●0000●00000000000000000000000000000000	8.14 (206.8)	1	GBK21 <sup>②</sup>
●0000●00000000000000000	9.19 (233.4)	1	GBK2120 <sup>②</sup>
00000000000000000	5.78 (146.8)	1	BRGBK39512 34
00000	1.84 (46.7)	1	GB4NM ®

# **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

- $^{\scriptsize \textcircled{\scriptsize 1}}$  Must be purchased in multiples of ordering quantities indicated.
- $\ensuremath{^{\circ}}$  Distance between mounting holes is 1.75 inches (44.5 mm).
- $^{\scriptsize \textcircled{3}}$  For single- and three-phase 400 and 600 A applications.
- ① Distance between mounting holes is 2.34 inches (59.5 mm).
- $\ensuremath{^{\textcircled{\texttt{5}}}}$  For non-metallic enclosures. Snaps into molded base.

### **Product Selection**

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

#### BR120

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



BR215



RR320



BRH2100



BRX2125



		Single-Pole 120/24 Requires One 1-Inc		Two-Pole 120/2 Common Trip Ro 1-Inch (25.4 mm	equires Two			
		10 per Shelf Carton		5 per Shelf Cart	ton			
		10 kAIC	22 kAIC	10 kAIC	22 kAIC	42 kAIC	65 kAIC	
Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	
10	#14-4	BR110	_	BR210	_	_	_	
15	#14-4	BR115 <sup>①2</sup>	BRH115	BR215 <sup>3</sup>	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	BRX260	
70	#8-1/0	BR170	BRH170	BR270	BRH270	BRHH270	BRX270	
80	#8-1/0	_	_	BR280	BRH280	BRHH280	BRX280	
90	#8-1/0	_	_	BR290	BRH290	BRHH290	BRX290	
100	#8-1/0	_	_	BR2100	BRH2100	BRHH2100	BRX2100	
110	#8-1/0	_	_	BR2110	BRH2110	BRHH2110	BRX2110	
125	#4-2/0	_	_	BR2125	BRH2125	BRHH2125	BRX2125	
150	#4-2/0	_	_	BR2150 @	_	_	_	

### 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.
- $^{\scriptsize \textcircled{4}}$  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.