

Enclosed Circuit Breakers



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Enclosed Circuit Breakers

Product Description

- 15–1200A
- Enclosed device used to open and close a circuit

Application Description

NEMA 1 General Purpose

**Surface or Flush Mounting
15–1200A, 600 Vac, 500 Vdc**

NEMA 1 enclosed breakers are designed for indoor use in commercial buildings, apartment buildings and other areas where a general purpose enclosure is applicable. The breaker is front operable and is capable of being padlocked in the OFF position. Ratings through 1200A are listed with Underwriters Laboratories as suitable for service entrance application. Both surface and flush mounted enclosures are available.



NEMA 1 General Purpose

NEMA 3R Rainproof
Surface Mounting ^①**Interchangeable Hubs (through
400A) 15–1200A, 600 Vac, 500 Vdc**

This general purpose outdoor service center employs a circuit breaker inside a weatherproof sheet steel enclosure to serve as a main disconnect and protective device for feeder circuits. The breaker is front operable and is capable of being padlocked in the OFF position. Ratings through 1200A are listed by Underwriters Laboratories as suitable for service entrance application.



NEMA 3R Rainproof Surface Mounting

NEMA 4/4X, 5 Water
and Dustproof**Stainless Steel—Type 304
Surface Mounting 15–1200A,
600 Vac, 500 Vdc**

This enclosure meets NEMA 4/4X and 5 requirements for water and dustproof applications and has no knockouts or other openings. It is particularly well suited for use in dairies, borax mines, breweries, paper mills and other process industries. The operating handle can be padlocked in the OFF position, and is interlocked to prevent the door from opening when the breaker is ON. Ratings through 1200A are Underwriters Laboratories listed as suitable for service entrance application.



NEMA 4/4X Water and Dustproof

Note

- ^① SFDN enclosed breakers do not have a door interlock to prevent door from being opened when breaker is "ON."

NEMA 12 Dustproof Surface Mounting

**No Knockouts or Other Openings
15–1200A, 600 Vac,
500 Vdc**

The Type 12 enclosure is designed in line with specifications for special industry application where unusually severe conditions involving oil, coolant, dust and other foreign materials exist in the operating atmosphere. The handle padlocks in the OFF position and the cover is interlocked with the handle mechanism to prevent opening the cover with the circuit breaker in the ON position. Ratings through 1200A are UL listed as suitable for service entrance application. A NEMA 12 semi-dust-tight design that includes knockouts is available. These units are rated 15–400A, 600 Vac, 500 Vdc.



NEMA 12 Dustproof Surface Mounting

NEMA 7/9 Hazardous Location

**Cast Aluminum, Explosion-proof
Surface Mounting 15–1200A,
600 Vac, 250 Vdc**

Hazardous location, Type 7: Class I, Groups B, C, D; Type 9: Class II, Groups E, F, G. This special service cast aluminum enclosure is supplied with a wide, machined flanged cover to prevent igniting outside atmospheres by arcing from inside the enclosure. Front operable, the handle padlocks in the OFF position. Enclosures rated 600A and above have lift-off hinges for ease of assembly.

Note: XFDN050B is not Group B compliant.



NEMA 7/9 Hazardous Location

Features, Benefits and Functions

- Side-opening door on NEMA 3R enclosures
- Padlockable in the OFF position
- Surface or flush mounted enclosures available through 400A on NEMA 1 enclosures
- Interlocked handle on NEMA 3R, 4/4X, 5 and 12 enclosures to prevent opening when the breaker is in the ON position
- Interchangeable hubs
- Numerous factory options

Standards and Certifications

- UL 489
- CSA 22.2
- NEMA 250

NEMA 1 General Purpose

- UL File No. E7819
- CSA File No. LR84319

NEMA 3R Rainproof Surface Mounting

- UL File No. E7819
- CSA File No. LR84319

NEMA 4/4X, 5 Water and Dustproof

- UL File No. E7819
- CSA File No. LR84319

NEMA 12 Dustproof Surface Mounting

- UL File No. E7819
- CSA File No. LR84319

NEMA 7/9 Hazardous Location

- UL File No. E84577
- CSA File No. LR42131-6

**Seismic Qualifications**

- Enclosed circuit breakers exceed the requirements of Uniform Building Code (UBC) and California Code Title 24 OSP-0338-10



Cross-Reference

Enclosed Circuit Breaker Competitive Catalog Numbers

NEMA Rating	Catalog Number		Square D Enclosure	Breaker	Siemens Enclosure	Breaker	General Electric Enclosure	Breaker
	Eaton Enclosure	Breaker						
1 surface	SGDN100	GHC3100	EHB125NS	EHB34100	—	—	—	—
1 flush	—	—	EHB125NF	EHB34100	—	—	—	—
3R	RGDN100	GHC3100	EHB125NRB	EHB34100	—	—	—	—
12	JGDN100	GHC3100	—	—	—	—	—	—
4/4X	WGDN100	GHC3100	—	—	—	—	—	—
1 surface	SFDN100	EHD3100L	FA100S	FAL34100	E2N1S	ED43B100	TE100S	TED134100WL
1 flush	FFDN100	EHD3100L	FA100F	FAL34100	E2N1F	ED43B100	TE100F	TED134100WL
3R	RFDN100	EHD3100L	FA100RB	FAL34100	E2N3R	ED43B100	TE100R	TED134100WL
12/3R	—	—	FA100AWK	FAL34100	—	—	—	—
12	JFDN100	EHD3100L	—	—	E2N12	ED43B100	TE100J/SE100J	TED134100WL
4/4X	WFDN100	EHD3100L	FA100DS	FAL34100	ED6SS4	ED43B100	TE100CS/SE100CS	TED134100WL
7/9	XFDN050	EHD3050L	FA060X	FAL34060	EA	ED43B100	—	—
9	—	—	FA060Y	FAL34060	—	—	—	—
7/9	XFDN225B ①	FD3225L	FA100X	FAL34100	EB	ED43B100	—	—
9	—	—	FA100Y	FAL34100	—	—	—	—
1 surface	SFDN225 ①	FDB3150L	—	—	E2N1S	ED43B125	TE150S	TED134150WL
1 flush	FFDN225 ①	FDB3150L	—	—	E2N1F	ED43B125	TE150F	TED134150WL
3R	RFDN225 ①	FDB3150L	—	—	E2N3R	ED43B125	TE150R	TED134150WL
12	JFDN225 ①	FDB3150L	—	—	E2N12	ED43B125	—	—
4/4X	WFDN225 ①	FDB3150L	—	—	ED6SS4	ED43B125	—	—
7/9	XFDN225B ①	FDB3150L	—	—	—	—	—	—
1 surface	SFDN225 ①	FD3225L	—	—	—	—	—	—
1 flush	FFDN225 ①	FD3225L	—	—	—	—	—	—
3R	RFDN225 ①	FD3225L	—	—	—	—	—	—
12	JFDN225 ①	FD3225L	—	—	—	—	—	—
4/4X	WFDN225 ①	FD3225L	—	—	—	—	—	—
7/9	XFDN225B ①	FD3225L	—	—	—	—	—	—
1 surface	SJDN250	JDB3250	KA225S	KAL36250	F6N1S	FXD63B250	TF225S	TFJ236225WL
1 flush	FJDN250	JDB3250	KA225F	KAL36250	F6N1F	FXD63B250	TF225F	TFJ236225WL
3R	RJDN250	JDB3250	KA225RB	KAL36250	F6N3R	FXD63B250	TF225R	TFJ236225WL
12/3R	—	JDB3250	KA225AWK	KAL36250	—	—	—	—
12	JJDN250	JDB3250	—	—	F6N12	FXD63B250	TF225J/SF250J	TFJ236225WL
4/4X	WJDN250	JDB3250	KA225DS	KAL36250	FD6SS4	FXD63B250	TF225CS/SF250CS	TFJ236225WL
7/9	XJDN250B	—	KA225X	KAL36250	EC2	FXD63B250	—	—
9	—	—	KA225Y	KAL36250	—	—	—	—

Note

① Maximum wire size 4/0.

Product Selection

1. Use the data on **Page V2-T1-129** to determine type of enclosure required.
2. Use the data on **Page V2-T1-123** and **V2-T1-124** to determine circuit breaker required.
3. **Pages V2-T1-125** through **V2-T1-131** include rough-in dimensional information.

Enclosure Only—Series C Breakers

Breaker Frame	Breaker Ampere Range	Enclosure NEMA Class	Catalog Number
Series C Breakers			
GHC, GD (two- and three-pole only) GHCGFEP (single-pole only)	15–100	1 surface	SGDN100 ①
		3R	RGDN100
		12	JGDN100
		4/4X, 5 stainless steel	WGDN100
EHD, FD, FDB, HFD, ED, EDH, EDB, EDS, FDC, FDE, HFDE, HFDDC	15–100	1 surface	SFDN100
		1 flush	FFDN100
		3R	RFDN100
		12	JFDN100
		4/4X, 5 stainless steel	WFDN100
EHD, FD, FDB, EHD, FD, FDB	15–50	7/9 cast aluminum	XFDN050B
HFD, FDC, EHD, FD, FDB	60–225 ②	7/9 cast aluminum	XFDN225B
FD, FDB, HFD, ED, EDH, EDC, FDC (15–225 A) EDB, EDS, FDE, HFDE, FDCE, HFDDC	125–225	1 surface	SFDN225
		1 flush	FFDN225
		3R	RFDN225
		12	JFDN225
		4/4X, 5 stainless steel	WFDN225
JD, JDB, HJD, JDC	125–250	1 surface	SJDN250
		1 flush	FJDN250
		3R	RJDN250
		12	JJDN250
		4/4X, 5 stainless steel	WJDN250
JD, JDB, HJD, JDC	125–250	7/9 cast aluminum	XJDN250B
KD, KDB, HKD, KDC, DK HKDB ③, CKD, CHKD, KDB, HKDDC	125–400	1 surface	SKDN400
		1 flush	FKDN400
		3R	RKDN400
		12	JKDN400
		4/4X, 5 stainless steel	WKDN400

Enclosure Only—Series C Breakers, continued

Breaker Frame	Breaker Ampere Range	Enclosure NEMA Class	Catalog Number
Series C Breakers, continued			
KD, KDB, HKD, KDC, DK	125–400	7/9 cast aluminum	XKDN400B
LGE, LGS, LGH	250–600	1 surface	SLG630
		3R	RLG630
		12	JLG630 ⑤
		4/4X, 5 stainless steel	WLG630
LD, LDB, HLD ④, HLDB, LDCB	300–600	1 surface	SLDN600
		3R	RLDN600
		12	JLDN600
		4/4X, 5 stainless steel	WLDN600
		7/9 cast aluminum	XLDN600B
LD, LDB, HLD	300–600	7/9 cast aluminum	XMEN800B
MDL, HMDL	400–800		
MDL, HMDL, ND, HND ④ MPS, MPH, HMDL, MDLB, HMDLDC, HMDLB, MDLPV Molded Case Switches (w/ VK suffix)— MDL, MDLB, HMDL, HLDLC, ND, HND, HMDLDC Molded Case Switches (w/ K suffix)— MPS Molded Case Switches (w/ SE suffix)— NGK	400–1200	1 surface	SNDN1200
		3R	RNDN1200
		12	JNDN1200
		4/4X, 5 stainless steel	WNDN1200
ND, HND	—	7/9 cast aluminum	XNDN1200B

Enclosure Only—Series G Breakers

Breaker Frame	Breaker Ampere Range	Enclosure NEMA Class	Catalog Number
Series G Breakers			
LGE, LGS, LGH	250–600	1 surface	SLG630 ⑥
		3R	RLG630 ⑥
		12	JLG630 ⑥
		4/4X, 5 st. steel	WLG630 ⑥
NG, NGS, NGH	320–1200	1 surface	SNDN1200
		3R	RNDN1200
		12	JNDN1200
		4/4X, 5 st. steel	WNDN1200

Notes

- ① Suitable for use with single-pole breaker. Base mounting plate kit. QCCBP required.
- ② Maximum wire size: 4/0.
- ③ Not applicable for XKDN400B.
- ④ Short-circuit ratings are limited for high interrupting rated breakers. Refer to **Page V2-T1-123**.
- ⑤ Can be field converted to NEMA Type 3R.
- ⑥ Three- or four-pole.

Raintight Hubs

All rainproof enclosures 30–400A are shipped with plate over cutout. Hubs are not supplied with screws on 30–400A enclosures. Use screws from plate.

Raintight Hubs**Raintight Tubs**

Hubs	Hub Diameter		Catalog Number
	Inches	mm	
Small			
For use with RGDN and RFDN	0.75	19.1	DS075H1
	1.00	25.4	DS100H1
	1.25	31.8	DS125H1
	1.50	38.1	DS150H1
	2.00	50.8	DS200H1
Large			
For use with RJDN. RKDN has two cutouts	2.00	50.8	DS200H2
	2.50	63.5	DS250H2
	3.00	76.2	DS300H2
Required if using small DS hubs on RJDN and RKDN enclosures.			DS900AP

Breather and Drain, Hazardous Enclosures

A Universal Breather/Drain Fitting is installed in the top of an enclosure to provide ventilation to minimize condensation and in the bottom to allow drainage of accumulated condensation while maintaining explosion-proof integrity.

Type	Compliance		Conduit Opening	Catalog Number
	NEMA 7	NEMA 9		
BD	Class I, Groups C, D; Class I, Zone 1, Group IIB	Class II, Groups F, G	1/2	XPBD2
DBB	Class I, Groups B, C, D; Class I, Zone 1, Group IIB + Hydrogen	Class II, Groups E, F, G	1/2	XPDBB50

Neutral Kits, Insulated and Groundable

Maximum Enclosure Rating (A)	Main Lug Size Cu/Al	Catalog Number
100 SFDN100 RFDN100	(1) 14–1/0	DH100NK
100 (all others)	(1) 14–1/0	INK100
250	(1) 4–350 kcmil	INK250
400	(1) 4–600 kcmil or (2) 1/0–250 kcmil	INK400
600	(2) 250–500 kcmil	INK600
1200	(4) 3/0–750 kcmil	DS800NK ①

Note

① For use with 800 A and 1200 A M and N frame, and 100% rated.

Modifications

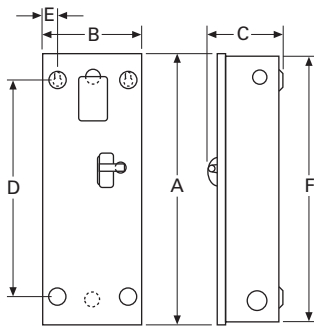
Allowable accessory combinations can be reviewed in Eaton's Circuit Breaker Product Guide: PG.74.A.01.T.E. Verify final application with the Customer Support Center.

Dimensions

Approximate Dimensions in Inches (mm)

NEMA 1, 12, 3R**Note:** Not to be used for construction purposes unless approved.**NEMA 1 Surface Mounted**

Frame	Maximum Amperes	A	B	C	D	E	F	Approximate Weight in Lbs (kg)
G	100	17.50 (444.5)	8.56 (217.4)	6.28 (159.5)	13.03 (331.0)	1.20 (30.5)	17.19 (436.6)	12 (5)
F ^①	100	19.13 (485.9)	9.13 (231.9) ^③	5.20 (132.1)	17.00 (431.8)	N/A ^④	18.81 (477.8)	13 (6)
Earth leakage	100	23.25 (590.6)	8.56 (217.4)	6.28 (159.5)	18.75 (476.3)	1.20 (30.5)	22.94 (582.7)	15 (7)
F ^②	225	23.25 (590.6)	8.56 (217.4)	6.28 (159.5)	18.75 (476.3)	1.20 (30.5)	22.94 (582.7)	15 (7)
J	250	34.70 (881.4)	10.92 (277.4)	7.20 (182.9)	30.00 (762.0)	1.88 (47.8)	34.39 (873.5)	31 (14)
K ^⑤	400	38.81 (985.8)	11.06 (280.9)	10.94 (277.9)	34.00 (863.6)	1.25 (31.8)	38.50 (977.9)	53 (24)
LG	600	51.06 (1296.9)	21.87 (555.5)	9.96 (253.0)	51.63 (1311.5)	1.94 (49.3)	50.13 (1273.3)	90 (41)
Earth leakage	600	51.06 (1296.9)	21.87 (555.5)	9.96 (253.0)	51.63 (1311.5)	1.94 (49.3)	50.13 (1273.3)	90 (41)
L	600	45.88 (1165.4)	14.31 (363.5)	12.38 (314.5)	46.56 (1182.6)	1.91 (48.5)	45.56 (1157.2)	81 (37)
M, N	1200	61.22 (1555.0)	21.44 (544.6)	15.41 (391.4)	61.84 (1570.7)	1.97 (50.0)	60.91 (1547.1)	178 (81)
M, N ^⑥	400–1200	67.82 (1722.6)	21.41 (543.8)	15.53 (394.5)	69.32 (1760.7)	1.97 (50.0)	68.69 (1744.7)	128 (58)

NEMA 1 Surface Mounted**Notes**

- ^① SFDN100 Series "B" released 9/15/01.
- ^② Maximum wire size: 4/0.
- ^③ Total width, including door clip is 9.95 inches (253 mm).
- ^④ Single centered mounting hole provided.
- ^⑤ Maximum wire size: 500 kcmil.
- ^⑥ 100% rated breakers.

Switching Devices

Enclosed Circuit Breakers

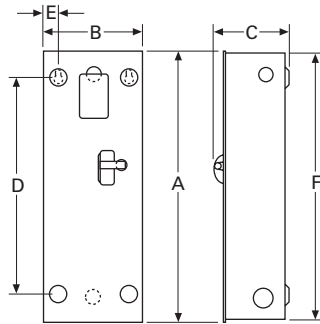
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Approximate Dimensions in Inches (mm)

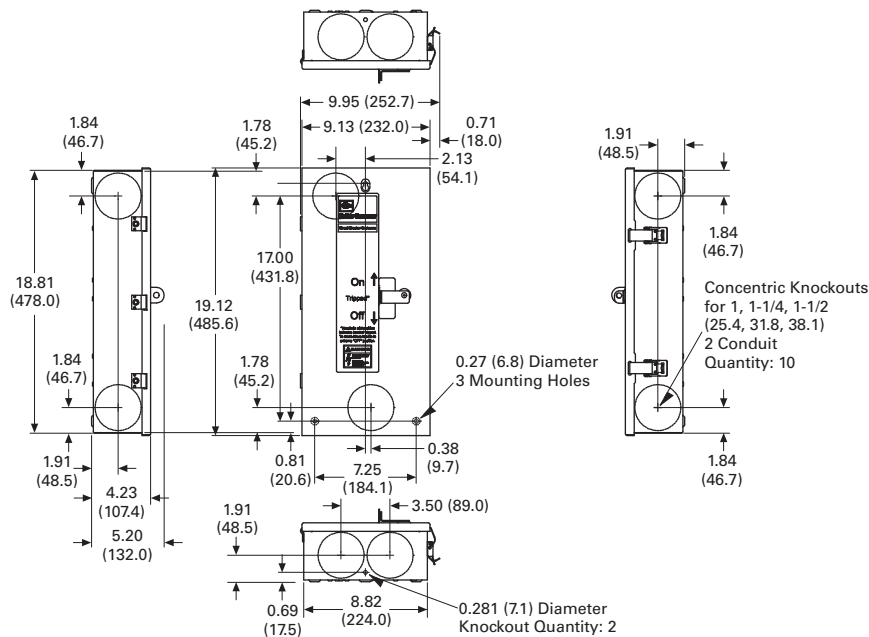
NEMA 1 Flush Mounted

Frame	Maximum Amperes	A	B	C	D	E	F	Approximate Weight in Lbs (kg)
F	100	18.81 (477.8)	9.72 (246.9)	6.28 (159.5)	13.03 (331.0)	1.86 (47.2)	18.50 (469.9)	12 (5)
Earth leakage	100	24.56 (623.8)	9.72 (246.9)	6.28 (159.5)	18.75 (476.3)	1.86 (47.2)	24.25 (616.0)	15 (7)
F ①	225	24.56 (623.8)	9.72 (246.9)	6.28 (159.5)	18.75 (476.3)	1.86 (47.2)	24.25 (616.0)	15 (7)
J	250	36.02 (914.9)	12.23 (310.6)	7.20 (182.9)	30.00 (762.0)	1.88 (47.8)	35.70 (906.8)	32 (15)
K ②	400	40.13 (1019.3)	12.38 (314.5)	10.94 (277.9)	34.00 (863.6)	2.94 (74.7)	39.81 (1011.2)	53 (24)

NEMA 1 Flush Mounted



NEMA 1 Surface Mounted SFDN100 Series "B"



Notes

- ① Maximum wire size: 4/0.
- ② Maximum wire size: 500 kcmil.