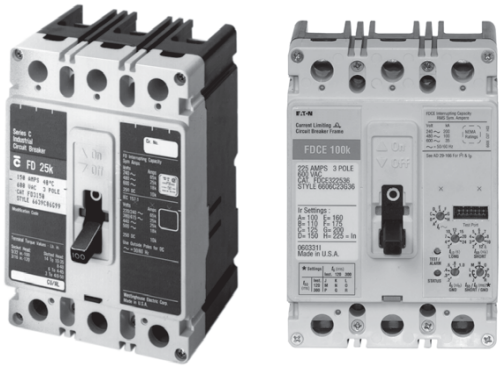
Typical F-Frame Breaker
F-Frame Breaker with Electronic Trip Unit



Contents

F-Frame (10–225 Amperes)

Product Description

- All Eaton's F-Frame circuit breakers are HACR rated
- All circuit breakers 10 through 30 amperes are suitable for HID (high intensity discharge) use
- All F-Frame circuit breakers are suitable for reverse feed use

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

FD-Frame Circuit Breakers with Thermal-Magnetic Trip Unit Technology

FDC 3 100 L

Circuit Breaker Type
EHD
FDB
FD
HFD
FDC

Number of Poles
1 = 1 pole
2 = 2 poles
3 = 3 poles
4 = 4 poles

Trip Amperes
010
015
020
025
030
035
040
045
050
060
070
080
090
100
110
125
150
175 (FD, HFD, FDC, two-, three-, four-pole only)
200 (FD, HFD, FDC, two-, three-, four-pole only)
225 (FD, HFD, FDC, two-, three-, four-pole only)

Suffix
E = 100% protected (four-pole only) neutral pole
EH = 50% protected (four-pole only)
K = High magnetic molded case switch
L = Line and load terminals
S = Stainless steel terminals
V = 50 °C calibration
W = Without terminals
Y = Line terminals only
Z = Aluminum terminals (≤100 amperes)

EDC 3 200 L

Circuit Breaker Type
EDB
EDS
ED
EDH
EDC

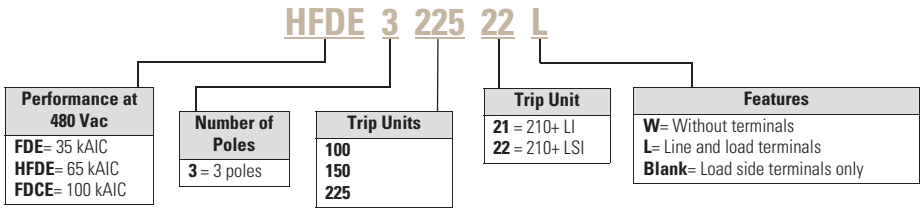
Number of Poles
2 = 2 poles
3 = 3 poles

Trip Amperes
100
125
150
175
200
225

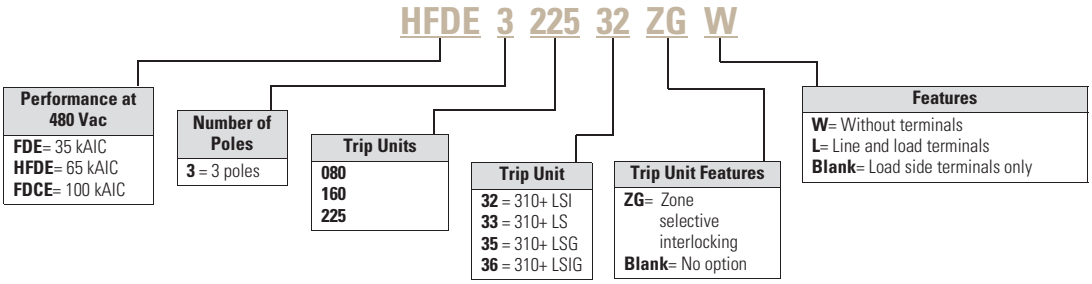
Suffix
L = Line and load terminals
W = Without terminals
Y = Line terminals only
Z = Aluminum terminals (100 amperes)

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

FD-Frame Circuit Breakers with 210+ Electronic Trip Unit Technology



FD-Frame Circuit Breakers with 310+ Electronic Trip Unit Technology



Product Selection

2

Type ED Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 65 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
15	**ED2015**	**ED3015**
20	**ED2020**	**ED3020**
25	**ED2025**	**ED3025**
30	**ED2030**	**ED3030**
35	**ED2035**	**ED3035**
40	**ED2040**	**ED3040**
50	**ED2050**	**ED3050**
60	**ED2060**	**ED3060**
100	**ED2100**	**ED3100**
125	**ED2125**	**ED3125**
150	**ED2150**	**ED3150**
175	**ED2175**	**ED3175**
200	**ED2200**	**ED3200**
225	**ED2225**	**ED3225**

Type EDH Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 100 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
15	—	—
20	—	—
25	—	—
30	—	—
35	—	—
40	—	—
50	—	—
60	—	—
100	**EDH2100**	**EDH3100**
125	**EDH2125**	**EDH3125**
150	**EDH2150**	**EDH3150**
175	**EDH2175**	**EDH3175**
200	**EDH2200**	**EDH3200**
225	**EDH2225**	**EDH3225**

Type EDC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 200 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
15	—	—
20	—	—
25	—	—
30	—	—
35	—	—
40	—	—
50	—	—
60	—	—
100	**EDC2100**	**EDC3100**
125	**EDC2125**	**EDC3125**
150	**EDC2150**	**EDC3150**
175	**EDC2175**	**EDC3175**
200	**EDC2200**	**EDC3200**
225	**EDC2225**	**EDC3225**

Type EDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 22 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
100	**EDB2100**	**EDB3100**
110	**EDB2110**	**EDB3110**
125	**EDB2125**	**EDB3125**
150	**EDB2150**	**EDB3150**
175	**EDB2175**	**EDB3175**
200	**EDB2200**	**EDB3200**
225	**EDB2225**	**EDB3225**

Type EDS Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 42 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
100	**EDS2100**	**EDS3100**
110	**EDS2110**	**EDS3110**
125	**EDS2125**	**EDS3125**
150	**EDS2150**	**EDS3150**
175	**EDS2175**	**EDS3175**
200	**EDS2200**	**EDS3200**
225	**EDS2225**	**EDS3225**

Type EHD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	277 Vac Maximum, 125 Vdc 14 kAIC at 277 Vac	480 Vac Maximum, 250 Vdc 14 kAIC at 480 Vac	
	Single-Pole	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
10 ①	**EHD1010**	**EHD2010**	**EHD3010**
15	**EHD1015** ②	**EHD2015**	**EHD3015**
20	**EHD1020** ②	**EHD2020**	**EHD3020**
25	**EHD1025**	**EHD2025**	**EHD3025**
30	**EHD1030**	**EHD2030**	**EHD3030**
35	**EHD1035**	**EHD2035**	**EHD3035**
40	**EHD1040**	**EHD2040**	**EHD3040**
45	**EHD1045**	**EHD2045**	**EHD3045**
50	**EHD1050**	**EHD2050**	**EHD3050**
60	**EHD1060**	**EHD2060**	**EHD3060**
70	**EHD1070**	**EHD2070**	**EHD3070**
80	**EHD1080**	**EHD2080**	**EHD3080**
90	**EHD1090**	**EHD2090**	**EHD3090**
100	**EHD1100**	**EHD2100**	**EHD3100**

Notes

① Not UL listed. 5 kAIC interrupting rating.

② UL listed for SWD applications, see NEC Article 240.83(d).

Type FDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	600 Vac Maximum, 250 Vdc 14 kAIC at 600 Vac		
	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
10 ①	**FDB2010**	**FDB3010**	**FDB4010**
15	**FDB2015**	**FDB3015**	**FDB4015**
20	**FDB2020**	**FDB3020**	**FDB4020**
25	**FDB2025**	**FDB3025**	**FDB4025**
30	**FDB2030**	**FDB3030**	**FDB4030**
35	**FDB2035**	**FDB3035**	**FDB4035**
40	**FDB2040**	**FDB3040**	**FDB4040**
45	**FDB2045**	**FDB3045**	**FDB4045**
50	**FDB2050**	**FDB3050**	**FDB4050**
60	**FDB2060**	**FDB3060**	**FDB4060**
70	**FDB2070**	**FDB3070**	**FDB4070**
80	**FDB2080**	**FDB3080**	**FDB4080**
90	**FDB2090**	**FDB3090**	**FDB4090**
100	**FDB2100**	**FDB3100**	**FDB4100**
110	**FDB2110**	**FDB3110**	**FDB4110**
125	**FDB2125**	**FDB3125**	**FDB4125**
150	**FDB2150**	**FDB3150**	**FDB4150**

Note

① Not UL listed. 5 kAIC interrupting rating.

Type FD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	277 Vac Maximum, 125 Vdc 35 kAIC at 277 Vac	600 Vac Maximum, 250 Vdc 35 kAIC at 480 Vac		
	Single-Pole	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number	Catalog Number
10 ①	**FD1010**	—	—	—
15	**FD1015** ②	**FD2015**	**FD3015**	**FD4015**
20	**FD1020** ②	**FD2020**	**FD3020**	**FD4020**
25	**FD1025**	**FD2025**	**FD3025**	**FD4025**
30	**FD1030**	**FD2030**	**FD3030**	**FD4030**
35	**FD1035**	**FD2035**	**FD3035**	**FD4035**
40	**FD1040**	**FD2040**	**FD3040**	**FD4040**
45	**FD1045**	**FD2045**	**FD3045**	**FD4045**
50	**FD1050**	**FD2050**	**FD3050**	**FD4050**
60	**FD1060**	**FD2060**	**FD3060**	**FD4060**
70	**FD1070**	**FD2070**	**FD3070**	**FD4070**
80	**FD1080**	**FD2080**	**FD3080**	**FD4080**
90	**FD1090**	**FD2090**	**FD3090**	**FD4090**
100	**FD1100**	**FD2100**	**FD3100**	**FD4100**
110	**FD1110**	**FD2110**	**FD3110**	**FD4110**
125	**FD1125**	**FD2125**	**FD3125**	**FD4125**
150	**FD1150**	**FD2150**	**FD3150**	**FD4150**
175	—	**FD2175**	**FD3175**	**FD4175**
200	—	**FD2200**	**FD3200**	**FD4200**
225	—	**FD2225**	**FD3225**	**FD4225**

Notes

① Not UL listed. 5 kAIC interrupting rating.

② UL listed for SWD applications, see NEC Article 240.83(d).

Type HFD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	277 Vac Maximum, 125 Vdc 65 kAIC at 277 Vac	600 Vac Maximum, 250 Vdc 65 kAIC at 480 Vac		
	Single-Pole	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number	Catalog Number
15	HFD1015 ①	HFD2015	HFD3015	HFD4015
20	HFD1020 ①	HFD2020	HFD3020	HFD4020
25	HFD1025	HFD2025	HFD3025	HFD4025
30	HFD1030	HFD2030	HFD3030	HFD4030
35	HFD1035	HFD2035	HFD3035	HFD4035
40	HFD1040	HFD2040	HFD3040	HFD4040
45	HFD1045	HFD2045	HFD3045	HFD4045
50	HFD1050	HFD2050	HFD3050	HFD4050
60	HFD1060	HFD2060	HFD3060	HFD4060
70	HFD1070	HFD2070	HFD3070	HFD4070
80	HFD1080	HFD2080	HFD3080	HFD4080
90	HFD1090	HFD2090	HFD3090	HFD4090
100	HFD1100	HFD2100	HFD3100	HFD4100
110	HFD1110	HFD2110	HFD3110	HFD4110
125	HFD1125	HFD2125	HFD3125	HFD4125
150	HFD1150	HFD2150	HFD3150	HFD4150
175	—	HFD2175	HFD3175	HFD4175
200	—	HFD2200	HFD3200	HFD4200
225	—	HFD2225	HFD3225	HFD4225

Note

① UL listed for SWD applications, see NEC Article 240.83(d).

Type FDC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	600 Vac Maximum, 250 Vdc 100 kAIC at 480 Vac		
	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
15	**FDC2015**	**FDC3015**	**FDC4015**
20	**FDC2020**	**FDC3020**	**FDC4020**
25	**FDC2025**	**FDC3025**	**FDC4025**
30	**FDC2030**	**FDC3030**	**FDC4030**
35	**FDC2035**	**FDC3035**	**FDC4035**
40	**FDC2040**	**FDC3040**	**FDC4040**
45	**FDC2045**	**FDC3045**	**FDC4045**
50	**FDC2050**	**FDC3050**	**FDC4050**
60	**FDC2060**	**FDC3060**	**FDC4060**
70	**FDC2070**	**FDC3070**	**FDC4070**
80	**FDC2080**	**FDC3080**	**FDC4080**
90	**FDC2090**	**FDC3090**	**FDC4090**
100	**FDC2100**	**FDC3100**	**FDC4100**
110	**FDC2110**	**FDC3110**	**FDC4110**
125	**FDC2125**	**FDC3125**	**FDC4125**
150	**FDC215**	**FDC3150**	**FDC4150**
175	**FDC2175**	**FDC3175**	**FDC4175**
200	**FDC2200**	**FDC3200**	**FDC4200**
225	**FDC2225**	**FDC3225**	**FDC4225**

Types FDE, HFDE and FDCE 310+ Electronic Circuit Breakers with Non-Interchangeable Trip Units

See 310+ adjustability specifications on **Page V4-T2-281**.

	Digitrip RMS 310+ Trip Unit Only				
	Standard	Optional			
	LS	LSI	LSG	LSIG	
Maximum Ampere Rating	Adjustable Short Time Pickup with I^2t Short Delay Ramp Catalog Number	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG Catalog Number
35 kAIC at 480 Vac / 18 kAIC at 600 Vac					
80	**FDE308033**	**FDE308032**	**FDE308035**	**FDE308036**	**CTF080**
160	**FDE316033**	**FDE316032**	**FDE316035**	**FDE316036**	**CTF160**
225	**FDE322533**	**FDE322532**	**FDE322535**	**FDE322536**	**CTF225**
65 kAIC at 480 Vac / 25 kAIC at 600 Vac					
80	**HFDE308033**	**HFDE308032**	**HFDE308035**	**HFDE308036**	**CTF080**
160	**HFDE316033**	**HFDE316032**	**HFDE316035**	**HFDE316036**	**CTF160**
225	**HFDE322533**	**HFDE322532**	**HFDE322535**	**HFDE322536**	**CTF225**
100 kAIC at 480 Vac / 25 kAIC at 600 Vac					
80	**FDCE308033**	**FDCE308032**	**FDCE308035**	**FDCE308036**	**CTF080**
160	**FDCE316033**	**FDCE316032**	**FDCE316035**	**FDCE316036**	**CTF160**
225	**FDCE322533**	**FDCE322532**	**FDCE322535**	**FDCE322536**	**CTF225**

Types FDE, HFDE, and FDCE 210+ Electronic Circuit Breakers with Non-Interchangeable Trip Units

	Digitrip RMS 210+ Trip Unit Only	
	Standard	Optional
	LI Adjustable Instantaneous	LSI Adjustable Short Time Pickup and Delay
Maximum Ampere Rating	Catalog Number	Catalog Number
35 kAIC at 480 Vac / 18 kAIC at 600 Vac		
100	**FDE310021**	**FDE310022**
150	**FDE315021**	①
225	**FDE322521**	**FDE322522**
65 kAIC at 480 Vac / 25 kAIC at 600 Vac		
100	**HFDE310021**	**HFDE310022**
150	**HFDE315021**	①
225	**HFDE322521**	**HFDE322522**

210+ Trip Electronic Trip Units Amperage Settings

Circuit Breaker Type	Frame	Ratings
FDE, HFDE	225	100, 110, 125, 150, 175, 200, 225
FDE, HFDE	150	70, 80, 90, 100, 110, 125, 150
FDE, HFDE	100	40, 50, 60, 70, 80, 90, 100

FDE 310+ Electronic Breaker with Zone Selective Interlocking

Ampere Rating	LSI w/ZSI Catalog Number	LSIG w/ZSI Catalog Number
35 kAIC at 480 Vac / 18 kAIC at 600 Vac		
80	**FDE308032ZG**	**FDE308036ZG**
160	**FDE316032ZG**	**FDE316036ZG**
225	**FDE322532ZG**	**FDE322536ZG**
65 kAIC at 480 Vac / 25 kAIC at 600 Vac		
80	**HFDE308032ZG**	**HFDE308036ZG**
160	**HFDE316032ZG**	**HFDE316036ZG**
225	**HFDE322532ZG**	**HFDE322536ZG**
100 kAIC at 480 Vac / 25 kAIC at 600 Vac		
80	**FDCE308032ZG**	**FDCE308036ZG**
160	**FDCE316032ZG**	**FDCE316036ZG**
225	**FDCE322532ZG**	**FDCE322536ZG**

Digitrip 310+ Electronic Trip Units Amperage Settings

Circuit Breaker Type	Frame	Ratings
FDE, HFDE, FDCE	225	100, 110, 125, 150, 160, 175, 200, 225
FDE, HFDE, FDCE	160	60, 70, 80, 90, 100, 125, 150, 160
FDE, HFDE, FDCE	80	15, 20, 30, 40, 50, 60, 70, 80

Note

① For 210+ trip unit, 150 A not available with LSI trip unit; entire range is covered by 100 A and 225 A frames.

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

	Complete Circuit Breaker with Load Side Terminals Only		
	480 Vac Maximum, 250 Vdc	600 Vac Maximum, 250 Vdc	
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
Two-Pole			
100	**EHD2100K**	**FD2100K**	**HFD2100K**
150	—	**FD2150K**	**HFD2150K**
225	—	**FD2225K**	**HFD2225K**
Three-Pole			
100	**EHD3100K**	**FD3100K**	**HFD3100K**
150	—	**FD3150K**	**HFD3150K**
225	—	**FD3225K**	**HFD3225K**
Four-Pole			
100	—	**FD4100K**	**HFD4100K**
150	—	**FD4150K**	**HFD4150K**
225	—	**FD4225K**	**HFD4225K**

Note

Molded case switches will open above 1800 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. Except as noted, terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B. Unless otherwise specified, F-Frame circuit breakers are factory equipped with load terminals only.

Ordering Information

F-Frame circuit breakers and molded case switches have load terminals only as standard equipment. When standard line-end terminals (same as standard load-end terminals) are required, add Suffix **L** to the circuit breaker catalog number. When non-standard or optional line and/or load terminals are required, order by style number. Specify if factory installation is required.

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range	Metric Wire Range mm^2	Package of Three Terminals Catalog Number
Standard Pressure Type Terminals					
20 (EHD)	Steel	Cu/Al	14–10	2.5–4	**3T20FB** ①
100	Steel	Cu/Al	14–1/0	2.5–50	**3T100FB**
225	Aluminum	Cu/Al	4–4/0	25–95	**3TA225FD**
Optional Pressure Terminals					
50	Aluminum	Cu/Al	14–4	2.5–25	**3TA50FB** ①
100	Aluminum	Cu/Al	14–1/0	2.5–50	**3TA100FD**
200	Stainless steel	Cu	4–4/0	25–95	**3T150FB**
225	Copper	Cu	4–4/0	25–95	**3T225FD**
225	Aluminum	Cu/Al	6–300 kcmil	16–150	**3TA225FDK3** ②
225	Aluminum	Cu/Al	6–300 kcmil	16–150	**3TA225FDK** ②③

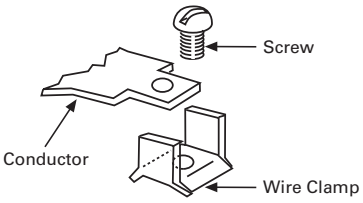
Notes

① Not for use with ED, EDH, EDC breakers.

② Includes terminal shield kit. Adds approximately 3 inches (76.2) to breaker height. Available for use on three-pole breaker only.

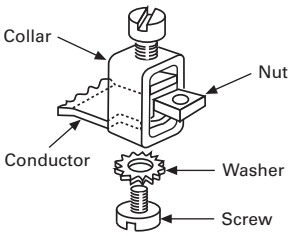
③ Replacement use only.

Line and Load Terminals



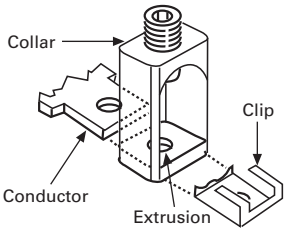
3T20FB

Assemble wire clamp to bottom of conductor as shown.



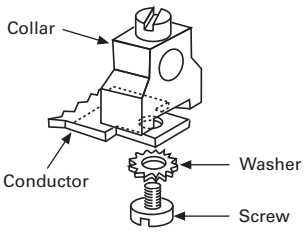
3T100FB, 3T150FB

Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer.
Caution: Collar must surround conductor.



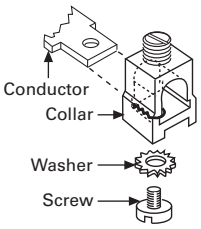
3TA225FD

Insert collar enclosing conductor and center on extrusion on collar. Install clip with legs on top of conductor and snap end around bottom of collar.



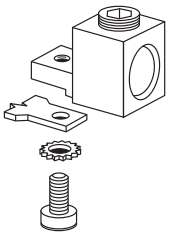
3TA50FB

Assemble collar on top of conductor as shown. Tighten securely with screw and washer.



3TA100FD

Collar slides onto conductor and is held in position by a screw and lockwasher.



3TA225FDK3 (Up to 150 mm^2)

Assemble collar on top of conductor as shown. Tighten securely with screw and washer. Terminal shield must be used with this collar.
Note: For 185 mm^2, use 3TA225FDK1.
Same illustration for 3TA225FDK

Accessories

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

Allowable Accessory Combinations

FD Frame Accessories

Description	Reference Page	Single-Pole	Two-Pole		Three-Pole ①			Four-Pole			
		Center	Left	Right	Left	Center	Right	Left	Center	Right	Neutral
Internal Accessories (Only one internal accessory per pole)											
Alarm lockout switch (make only)	**V4-T2-405**	■	—	—	—	—	—	—	—	—	—
Alarm lockout (Make/Break)	**V4-T2-405**	—	—	■	❑	—	❑	■	—	—	—
Alarm lockout (2Make/2Break)	**V4-T2-405**	—	—	■	❑	—	❑	■	—	—	—
Auxiliary switch (1A, 1B)	**V4-T2-407**	—	—	■	■	—	■	■	—	—	■
Auxiliary switch (2A, 2B)	**V4-T2-407**	—	—	■	■	—	■	■	—	—	■
Auxiliary switch and alarm switch combination	**V4-T2-409**	—	—	■	❑	—	❑	■	—	—	—
Shunt trip—standard	**V4-T2-411**	—	—	■	■	—	■	■	—	—	■
Shunt trip—low energy	**V4-T2-415**	—	—	■	■	—	■	■	—	—	—
Undervoltage release mechanism	**V4-T2-417**	—	—	■	■	—	■	■	—	—	—
External Accessories											
End cap kit	**V4-T2-440**	—	●	●	●	●	●	●	●	●	●
Keeper nut	**V4-T2-440**	●	●	●	●	●	●	●	●	●	●
Control wire terminal kit	**V4-T2-441**	●	●	●	●	●	●	●	●	●	●
Multiwire connectors	**V4-T2-442**	●	●	●	●	●	●	●	●	●	●
Rear fed terminals	**V4-T2-442**	●	●	●	●	●	●	●	●	●	●
Base mounting hardware	**V4-T2-442**	●	●	●	●	●	●	●	●	●	●
Terminal shields	**V4-T2-444**	●	●	●	●	●	●	●	●	●	●
Terminal end covers	**V4-T2-445**	—	—	—	●	●	●	—	—	—	—
Interphase barriers	**V4-T2-445**	—	●	●	●	●	●	●	●	●	●
Non-padlockable handle block	**V4-T2-446**	■	■	—	—	■	—	—	■	—	—
Snap-on padlockable handle lock hasp	**V4-T2-446**	■	■	—	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V4-T2-447**	—	—	■	❑	—	❑	❑	—	❑	—
Cylinder lock	**V4-T2-447**	—	—	—	■	—	—	—	—	—	—
Key interlock kit	**V4-T2-448**	—	—	■	❑	—	❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V4-T2-449**	—	—	—	●	●	●	—	—	—	—
Walking beam interlock—requires two breakers	**V4-T2-449**	—	—	—	●	●	●	●	●	●	●
Electrical (solenoid and motor) operators	**V4-T2-450**	—	—	—	●	●	●	●	●	●	●
Plug-in adapters	**V4-T2-451**	—	●	●	●	●	●	●	●	●	●
Rear connecting studs	**V4-T2-453**	●	●	●	●	●	●	●	●	●	●
Panelboard connecting straps	**V4-T2-454**	●	●	●	●	●	●	●	●	●	●
Handle mechanisms	**V4-T2-534**	—	—	—	●	●	●	—	—	—	—
LFD current limiter	**V4-T2-456**	—	—	—	●	●	●	—	—	—	—
IQ Energy Sentinel	**V4-T2-456**	—	●	●	●	●	●	—	—	—	—
Cause of trip display	**V4-T2-457**	—	—	—	●	—	—	●	—	—	—
Remote mount cause of trip display	**V4-T2-457**	—	—	—	●	—	—	●	—	—	—
Cause of trip LED	**V4-T2-457**	—	—	—	●	—	—	●	—	—	—
Modifications (Refer to Eaton)											
Special calibration	—	●	●	●	●	●	●	●	●	●	●
Moisture fungus treatment	**V4-T2-246**	●	●	●	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Note

① Internal accessories are listed with Underwriters Laboratories (UL) for factory installation. They are not listed with UL for field installation.

Technical Data and Specifications

UL 489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	277	480	600	Volts DC ① 125	250 ②③
EDB	2, 3	22	—	—	—	10	—
EDS	2, 3	42	—	—	—	10	—
ED	2, 3	65	—	—	—	10	—
EDH	2, 3	100	—	—	—	10	—
EDC	2, 3	200	—	—	—	10	—
EHD	1	—	4	—	—	10	—
	2, 3	18	—	14	—	—	10
FDB	2, 3, 4	18	—	14	14	—	10
FD	1	—	35	—	—	10	—
	2, 3, 4	65	—	35	18	—	10
FDE ④	3	65	—	35	18	—	—
HFD	1	—	65	—	—	10	—
	2, 3, 4	100	—	65	25	—	22
HFDE ④	3	100	—	65	25	—	—
FDC ⑤	2, 3, 4	200	—	100	35	—	22
FDCE ④⑤⑥	3	200	—	100	25	—	—

IEC 157-1 (P1) Interrupting Capacity Ratings (P1)

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 220, 240	380, 415	440	500	Volts DC ① 125	250 ②③
EDB	2, 3	22	—	—	—	10	—
EDS	2, 3	42	—	—	—	10	—
ED	2, 3	65	—	—	—	10	—
EDH	2, 3	100	—	—	—	10	—
EDC	2, 3	200	—	—	—	10	—
EHD	1	—	14	—	—	10	—
	2, 3	18	—	14	—	—	10
FDB	2, 3, 4	18	14	14	14	—	10
FD	1	35	—	—	—	10	—
	2, 3, 4	65	35	35	18	—	10
HFD	1	65	—	—	—	10	—
	2, 3, 4	100	65	65	25	—	22
FDC	2, 3, 4	200	100	100	35	—	22

210+ and 310+ Electronic Trip Unit Accessories

Description	210+	310+	Catalog number
Electronic portable test kit	?	?	**MTST230V**
Trip unit tamper protection wire seal	?	?	**5108A03H01**
External neutral sensor (80 A) ⑦		?	**CTF080**
External neutral sensor (160 A) ⑦		?	**CTF160**
External neutral sensor (225 A) ⑦		?	**CTF225**
Compact external neutral sensor (80 A) ⑦		?	**CTFD080**
Compact external neutral sensor (160 A) ⑦		?	**CTFD160**
Compact external neutral sensor (225 A) ⑦		?	**CTFD225**
Breaker-mount cause-of-trip indication		?	**TRIP-LED**
Breaker-mount ammeter module		?	**DIGIVIEW**
Remote-mount ammeter module		?	**DIGIVIEWR06**

UL 489 Current Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
FDC	240 V/200 kA	41.4	1.41
FDC	480 V/100 kA	38.9	2.50
FDC	600 V/35 kA	29.0	3.00

Notes

① DC ratings apply to substantially non-inductive circuits.
② Two-pole circuit breaker, or two poles of three-pole circuit breaker.
③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
④ Electronics available on three-pole only, no DC rating for FDE, HFDE, FDCE.
⑤ Current limiting.
⑥ Check with Eaton for availability.
⑦ Neutral sensor required for four-wire systems if neutral protection is desired; sold separately.

FDE 210+ and 310+ Specifications

Description	Digitrip RMS 210+	Digitrip RMS 310+
Breaker type		
Frame designation	FD	FD
Frames available	100 A, 150 A, 225 A	80 A, 160 A, 225 A
Continuous current range (A)	40–225 A	15–225 A
Ground fault pickup (A)	N/A	16–225 A
Interrupting capacities at 480 Vac (kAIC)	35, 65, 100	35, 65, 100
Protection		
Ordering options	LI, LSI	LS, LSI, LSG, LSIG
Arcflash Reduction Maintenance System™ (or Maintenance Mode)	No	No
Interchangeable trip unit	No	No
High load alarm (suffix B20)	No	No
Ground fault alarm with trip (suffix B21)	No	No
Ground fault alarm, no trip (suffix B22)	No	No
Zone selective interlocking (suffix ZG)	No	LSI, LSIG
Cause of trip indication	No	Yes
Thru-cover accessories	No	No
Test kit available	Yes	Yes

FDE 210+ Adjustability Specifications

210+ settings		FD Frame 100 A	150 A	225 A
I_r = continuous current or long delay pickup (amperes) (all 210+)	I_r			
	A	40	70	100
	B	50	80	110
	C	60	90	125
	D	70	100	150
	E	80	110	175
	F	90	125	200
	G (= I_n)	100	150	225
I_i (x I_n)= Instantaneous pickup (210+ LI version)	I_i	100	150	225
	J–2x	200	300	450
	K–2.5x	250	375	565
	L–3x	300	450	675
	M–3.5x	350	525	790
	N–4x	400	600	900
	O–5x	500	750	1125
	P–6x	600	900	1350
	Q–8x	800	1200	1800
	R–10x	1000	1500	2250
	S–12x ①	1200	1800	2400
Fixed instantaneous override (all 210+)		2400	2400	2400
"Isd (x Ir) / tsd = SD profile ② (210+ LSI version)	I_{sd} / t_{sd}	100	150	225
	J	2x / 150	N/A	2x / 150
	K	2x / 300	N/A	2x / 300
	L	2x / I^2t	N/A	2x / I^2t
	M	4x / Inst	N/A	4x / Inst
	N	4x / 150	N/A	4x / 150
	O	4x / I^2t	N/A	4x / I^2t
	P	6x / Inst	N/A	6x / Inst
	Q	6x / 300	N/A	6x / 300
	R	10x / 150	N/A	10x / 150
	S	10x / 300	N/A	10x / 300

FDE 310+ Adjustability Specifications

310+ Settings		FD Frame 80 A	160 A	225 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r			
	A	15	60	100
	B	20	70	110
	C	30	80	125
	D	40	90	150
	E	50	100	160
	F	60	125	175
	G	70	150	200
	H (= I_n)	80	160	225
t_r = long delay time (seconds) (All 310+)	Position 1	2	2	2
	Position 2	4	4	4
	Position 3	7	7	7
	Position 4	10	10	10
	Position 5	12	12	12
	Position 6	15	15	15
	Position 7	20	20	20
	Position 8	24	24	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x	2x	2x
	Position 2	3x	3x	3x
	Position 3	4x	4x	4x
	Position 4	5x	5x	5x
	Position 5	6x	6x	6x
	Position 6	7x	7x	7x
	Position 7	8x	8x	8x
	Position 8	10x	10x	10x
	Position 9	12x	12x	12x
t_{sd} = short delay time I^2t (milliseconds) (LS, LSG)	Fixed	67 at10x	67 at10x	67 at10x
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG)	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
I_g = ground fault pickup (amperes) (LSG, LSIG)	Position 1	16	32	45
	Position 2	24	48	67
	Position 3	32	64	90
	Position 4	48	96	135
	Position 5	64	128	180
	Position 6	80	160	225
t_g = ground fault delay time (milliseconds) (LSG, LSIG)	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
Independently Adjustable Instantaneous (I_i) setting	①			
Maintenance Mode pickup (2.5 x I_n) (amperes)	②			

Notes

① Not available for FD. Independently adjustable I_i setting available in LG, NG and RG ALSI and ALSIG trip units.

② Maintenance Mode not available for FD frames. It is available for KD, LD, MDL, LG, NG and RG.

Dimensions and Weights

Approximate Dimensions in Inches (mm)

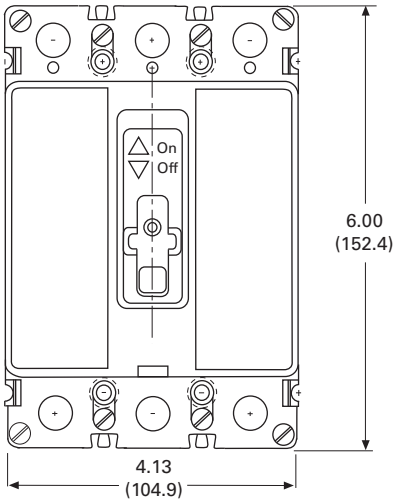
2

FD Frame

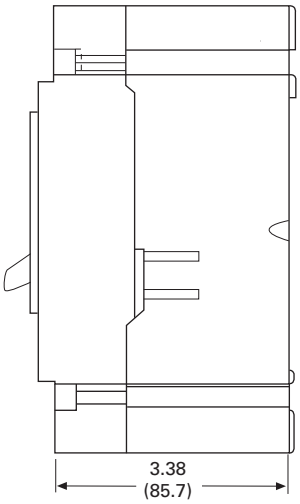
Number of Poles	Width	Height	Depth
1	1.38 (35.1)	6.00 (152.4)	3.38 (86.0)
2	2.75 (70.0)	6.00 (152.4)	3.38 (86.0)
3	4.13 (105.0)	6.00 (152.4)	3.38 (86.0)
4	5.50 (139.7)	6.00 (152.4)	3.38 (86.0)

FD Frame, Three-Pole

Front View



Side View



Approximate Shipping Weight Lbs (kg)

FD Frame

	Number of Poles			
Breaker Type	1	2	3	4
ED, EDB, EDS, EDH, EDC	—	3 (1.4)	4.5 (2.0)	—
EHD, FDB, FD, HFD, FDC	2 (0.9)	3 (1.4)	4.5 (2.0)	6 (2.7)
FDE, HFDE, FDCE	—	—	4.5 (2.0)	—