Section 3

Molded Case Circuit Breakers and Enclosures

PowerPact H- and J-Frame Circuit Breakers

Table 3.1: H-Frame 150 A UL Current-Limiting *[1]* Circuit Breaker Frame with Field-Interchangeable Thermal-Magnetic Trip Units *[2]* (600 Vac, 250 Vdc)

Ampere Rating	Fixed AC Magnetic Trip		Cat. No.				Terminal Wire Range
	Hold	Trip	D Interrupting	G Interrupting	J Interrupting *[1]*	L Interrupting *[1]*	
3P, 600 Vac 50/60 Hz							
15 A	350 A	750 A	HDL36015T	HGL36015T	HJL36015T	HLL36015T	AL150HD 14–3/0 AWG Al or Cu
20 A	350 A	750 A	HDL36020T	HGL36020T	HJL36020T	HLL36020T	
25 A	350 A	750 A	HDL36025T	HGL36025T	HJL36025T	HLL36025T	
30 A	350 A	750 A	HDL36030T	HGL36030T	HJL36030T	HLL36030T	
35 A	400 A	850 A	HDL36035T	HGL36035T	HJL36035T	HLL36035T	
40 A	400 A	850 A	HDL36040T	HGL36040T	HJL36040T	HLL36040T	
45 A	400 A	850 A	HDL36045T	HGL36045T	HJL36045T	HLL36045T	
50 A	400 A	850 A	HDL36050T	HGL36050T	HJL36050T	HLL36050T	
60 A	800 A	1450 A	HDL36060T	HGL36060T	HJL36060T	HLL36060T	
70 A	800 A	1450 A	HDL36070T	HGL36070T	HJL36070T	HLL36070T	
80 A	800 A	1450 A	HDL36080T	HGL36080T	HJL36080T	HLL36080T	
90 A	800 A	1450 A	HDL36090T	HGL36090T	HJL36090T	HLL36090T	
100 A	900 A	1700 A	HDL36100T	HGL36100T	HJL36100T	HLL36100T	
110 A	900 A	1700 A	HDL36110T	HGL36110T	HJL36110T	HLL36110T	
125 A	900 A	1700 A	HDL36125T	HGL36125T	HJL36125T	HLL36125T	
150 A	900 A	1700 A	HDL36150T	HGL36150T	HJL36150T	HLL36150T	

Table 3.2: J-Frame 250 A UL Current-Limiting *[1]* Circuit Breaker Frame with Field-Interchangeable Thermal-Magnetic Trip Units *[2]* (600 Vac, 250 Vdc)

Ampere Rating	Adjustable AC Magnetic Trip		Cat. No.				Terminal Wire Range
	Low	High	D Interrupting	G Interrupting	J Interrupting *[1]*	L Interrupting *[1]*	
3P, 600 Vac 50/60 Hz							
150 A	750 A	1500 A	JDL36150T	JGL36150T	JJL36150T	JLL36150T	AL175JD 4–4/0 AWG Al or Cu
175 A	875 A	1750 A	JDL36175T	JGL36175T	JJL36175T	JLL36175T	
200 A	1000 A	2000 A	JDL36200T	JGL36200T	JJL36200T	JLL36200T	AL250JD 3/0 AWG–350 kcmil Al or Cu
225 A	1125 A	2250 A	JDL36225T	JGL36225T	JJL36225T	JLL36225T	
250 A	1250 A	2500 A	JDL36250T	JGL36250T	JJL36250T	JLL36250T	

Table 3.3: H-Frame 150A and J-Frame 250 A 3P Basic UL Current-Limiting *[1]* Circuit Breaker Frame Without Terminations *[3]* or Trip Unit (600 Vac, 250 Vdc)

Circuit Breaker Frame	Ampere Rating	Cat. No.			
		D Interrupting	G Interrupting	J Interrupting *[1]*	L Interrupting *[1]*
H-Frame	15–60 A	HDF36000F06	HGF36000F06	HJF36000F06	HLF36000F06
	70–150 A	HDF36000F15	HGF36000F15	HJF36000F15	HLF36000F15
J-Frame	150–250 A	JDF36000F25	JGF36000F25	JJF36000F25	JLF36000F25

H-Frame and Trip Unit

Table 3.4: H-Frame and J-Frame 3P Field-Installable Thermal-Magnetic Trip Unit

15–60 A H-Frame		70–150 A H-Frame		150–250 A J-Frame	
Amperage	Cat. No.	Amperage	Cat. No.	Amperage	Cat. No.
15 A	HT3015	70 A	HT3070	150 A	JT3150
20 A	HT3020	80 A	HT3080	175 A	JT3175
25 A	HT3025	90 A	HT3090	200 A	JT3200
30 A	HT3030	100 A	HT3100	225 A	JT3225
35 A	HT3035	110 A	HT3110	250 A	JT3250
40 A	HT3040	125 A	HT3125	—	—
45 A	HT3045	150 A	HT3150	—	—
50 A	HT3050	—	—	—	—
60 A	HT3060	—	—	—	—

Table 3.5: H- and J-Frame Interrupting Ratings

Voltage	Interrupting Rating			
	D	G	J	L
240 Vac	25 KA	65 kA	100 kA	125 kA
480 Vac	18 kA	35 kA	65 kA	100 kA
600 Vac	14 kA	18 kA	25 kA	50 kA

Table 3.6: H- and J-Frame Termination Options

Termination Letter
A - I-Line (See Section 9)
F = No Lugs (includes terminal nut kit on both ends) *[4]*
L = Lugs both ends
M = Lugs ON end Terminal Nut Kit OFF end
P = Lugs OFF end Terminal Nut Kit ON end
N = Plug-in
D = Drawout
S = Rear Connected
For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number. H D **L** 3 6 0 1 5 T

Accessories see Digest Section 7
Optional Lugs see Digest Section 7
Dimensions see Digest Section 7
Enclosures see Digest Section 7

[1] J and L interrupts are UL Certified as current limiting.
[2] Circuit breakers will be labeled with Line and Load markings and are not suitable for reverse connections. Available on 3P circuit breakers; not available onI-Line™ constructions. For 100% rated circuit breakers replace the “T” suffix with an “R” suffix. 100% rated is not available in I-Line, plug-in, or drawout constructions.
[3] See Digest Section 7 for lug and termination kits.
[4] Add TS suffix for circuit breaker without terminal nut kit.

PowerPact H- and J-Frame Circuit Breakers

Table 3.7: H-Frame 150 A and J-Frame 250 A Current-Limiting [5] Circuit Breakers with Lugs and Field-Interchangeable Electronic Trip Units (600 Vac, 50/60 Hz, 3P) [6]

Electronic Trip Unit			Sensor Rating	Cat. No.				Terminal Wire Range
Type	Function	Trip Unit		D Interrupting	G Interrupting	J Interrupting [5]	L Interrupting [5]	
Micrologic Standard	LI	3.2	60 A 100 A 150 A	HDL36060TU31X HDL36100TU31X HDL36150TU31X	HGL36060TU31X HGL36100TU31X HGL36150TU31X	HJL36060TU31X HJL36100TU31X HJL36150TU31X	HLL36060TU31X HLL36100TU31X HLL36150TU31X	AL150HD 14–3/0 AWG Al or Cu
			250 A	JDL36250TU31X	JGL36250TU31X	JJL36250TU31X	JLL36250TU31X	AL250JD 3/0 AWG–350 kcmil Al or Cu [7]
Micrologic Standard	LSI	3.2S	60 A 100 A 150 A	HDL36060TU33X HDL36100TU33X HDL36150TU33X	HGL36060TU33X HGL36100TU33X HGL36150TU33X	HJL36060TU33X HJL36100TU33X HJL36150TU33X	HLL36060TU33X HLL36100TU33X HLL36150TU33X	AL150HD 14–3/0 AWG Al or Cu
			250 A	JDL36250TU33X	JGL36250TU33X	JJL36250TU33X	JLL36250TU33X	AL250JD 3/0 AWG–350 kcmil Al or Cu [7]
Micrologic Ammeter	LSI	5.2A	60 A 100 A 150 A	HDL36060TU43X HDL36100TU43X HDL36150TU43X	HGL36060TU43X HGL36100TU43X HGL36150TU43X	HJL36060TU43X HJL36100TU43X HJL36150TU43X	HLL36060TU43X HLL36100TU43X HLL36150TU43X	AL150HD 14–3/0 AWG Al or Cu
			250 A	JDL36250TU43X	JGL36250TU43X	JJL36250TU43X	JLL36250TU43X	AL250JD 3/0 AWG–350 kcmil Al or Cu [7]
Micrologic Energy	LSI	5.2E	60 A 100 A 150 A	HDL36060TU53X HDL36100TU53X HDL36150TU53X	HGL36060TU53X HGL36100TU53X HGL36150TU53X	HJL36060TU53X HJL36100TU53X HJL36150TU53X	HLL36060TU53X HLL36100TU53X HLL36150TU53X	AL150HD 14–3/0 AWG Al or Cu
			250 A	JDL36250TU53X	JGL36250TU53X	JJL36250TU53X	JLL36250TU53X	AL250JD 3/0 AWG–350 kcmil Al or Cu [7]
Micrologic Ammeter	LSIG	6.2A	60 A 100 A 150 A	HDL36060TU44X HDL36100TU44X HDL36150TU44X	HGL36060TU44X HGL36100TU44X HGL36150TU44X	HJL36060TU44X HJL36100TU44X HJL36150TU44X	HLL36060TU44X HLL36100TU44X HLL36150TU44X	AL150HD 14–3/0 AWG Al or Cu
			250 A	JDL36250TU44X	JGL36250TU44X	JJL36250TU44X	JLL36250TU44X	AL250JD 3/0 AWG–350 kcmil Al or Cu [7]
Micrologic Energy	LSIG	6.2E	60 A 100 A 150 A	HDL36060TU54X HDL36100TU54X HDL36150TU54X	HGL36060TU54X HGL36100TU54X HGL36150TU54X	HDL36060TU54X HJL36100TU54X HJL36150TU54X	HLL36060TU54X HLL36100TU54X HLL36150TU54X	AL150HD 14–3/0 AWG Al or Cu
			250 A	JDL36250TU54X	JGL36250TU54X	JJL36250TU54X	JLL36250TU54X	AL250JD 3/0 AWG–350 kcmil Al or Cu [7]

Table 3.8: H-Frame 150A and J-Frame 250 A 3P Basic UL Current-Limiting [5] Circuit Breaker Frame Without Terminations [8] or Trip Unit (600 Vac, 250 Vdc)

Circuit Breaker Frame	Ampere Rating	Cat. No.			
		D Interrupting	G Interrupting	J Interrupting [5]	L Interrupting [5]
H-Frame	15–60 A	HDF36000F06	HGF36000F06	HJF36000F06	HLF36000F06
	70–150 A	HDF36000F15	HGF36000F15	HJF36000F15	HLF36000F15
J-Frame	150–250 A	JDF36000F25	JGF36000F25	JJF36000F25	JLF36000F25

Table 3.9: H- and J-Frame Interrupting Ratings

Voltage	Interrupting Rating			
	D	G	J	L
240 Vac	25 KA	65 kA	100 kA	125 kA
480 Vac	18 kA	35 kA	65 kA	100 kA
600 Vac	14 kA	18 kA	25 kA	50 kA

Table 3.10: Termination Letter

Termination Letter
A - I-Line (See Section 9)
F = No Lugs (includes terminal nut kit on both ends) [9]
L = Lugs both ends
M = Lugs ON end Terminal Nut Kit OFF end
P = Lugs OFF end Terminal Nut Kit ON end
N = Plug-in
D = Drawout
S = Rear Connected
H D **L** 3 6 0 1 5 T For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.

Accessories see Digest Section 7
Optional Lugs see Digest Section 7
Dimensions see Digest Section 7
Enclosures see Digest Section 7

Table 3.11: Micrologic Field-Installable Trip Unit

Model	Trip Function	Trip Unit	Continuous Current	Trip Unit Cat. No.
Micrologic Standard	LI	3.2	15-20-25-30-35-40-45-50-60	HE3060U31X
			35-40-45-50-60-70-80-90-100	HE3100U31X
			50-60-70-80-90-100-110-125-150	HE3150U31X
			70-80-100-125-150-175-200-225-250	JE3250U31X
	LSI	3.2S	15-20-25-30-35-40-45-50-60	HE3060U33X
			35-40-45-50-60-70-80-90-100	HE3100U33X
			50-60-70-80-90-100-110-125-150	HE3150U33X
			70-80-100-125-150-175-200-225-250	JE3250U33X
Micrologic Ammeter	LSI	5.2A	15–60	HE3060U43X
			35–100	HE3100U43X
			50–150	HE3150U43X
			70–250	JE3250U43X
	LSIG	6.2A	15–60	HE3060U44X
			35–100	HE3100U44X
			50–150	HE3150U44X
			70–250	JE3250U44X
Micrologic Energy	LSI	5.2E	15–60	HE3060U53X
			35–100	HE3100U53X
			50–150	HE3150U53X
			70–250	JE3250U53X
	LSIG	6.2E	15–60	HE3060U54X
			35–100	HE3100U54X
			50–150	HE3150U54X
			70–250	JE3250U54X

[5] J and L interrupts are UL Certified as current limiting.
[6] Circuit breakers will be labeled with Line and Load markings and are not suitable for reverse connections. Available on 3P circuit breakers; not available onI-Line™ constructions. For 100% rated circuit breakers replace the "T" suffix with an "R" suffix. 100% rated is not available in I-Line, plug-in, or drawout constructions.
[7] For smaller wire (4–4/0 AWG Al or Cu), replace the lug wire binding screws with longer binding screws provided.
[8] See Digest Section 7 for lug and termination kits.
[9] Add TS suffix for circuit breaker without terminal nut kit.

PowerPact L-Frame Molded Case Circuit Breaker

Table 3.12: L-Frame 3 Pole, 600 A Current-Limiting *[10]* Circuit Breakers with Lugs and Field-Interchangeable Electronic Trip Units (600 Vac, 50/60 Hz) *[11][12]*

Electronic Trip Unit			Sensor Rating	Cat. No.				Terminal Wire Range
Type	Function	Trip Unit		D Interrupting	G Interrupting	J Interrupting *[10]*	L Interrupting *[10]*	
Micrologic Standard	LI	3.3	250 A	LDL36250TU31X	LGL36250TU31X	LJL36250TU31X	LLL36250TU31X	AL400L61K3D (1) 2 AWG–600 kcmil Cu (1) 2 AWG–500 kcmil Al
			400 A	LDL36400TU31X	LGL36400TU31X	LJL36400TU31X	LLL36400TU31X	AL600S52K3 (2) 2/0 AWG–500 kcmil Al/Cu
			600 A	LDL36600TU31X	LGL36600TU31X	LJL36600TU31X	LLL36600TU31X	
Micrologic Standard	LSI	3.3S	250 A	LDL36250TU33X	LGL36250TU33X	LJL36250TU33X	LLL36250TU33X	AL400L61K3D (1) 2 AWG–600 kcmil Cu (1) 2 AWG–500 kcmil Al
			400 A	LDL36400TU33X	LGL36400TU33X	LJL36400TU33X	LLL36400TU33X	AL600S52K3 (2) 2/0 AWG–500 kcmil Al/Cu
			600 A	LDL36600TU33X	LGL36600TU33X	LJL36600TU33X	LLL36600TU33X	
Micrologic Ammeter	LSI	5.3A	400 A	LDL36400TU43X	LGL36400TU43X	LJL36400TU43X	LLL36400TU43X	AL600S52K3 (2) 2/0 AWG–500 kcmil Al/Cu
			600 A	LDL36600TU43X	LGL36600TU43X	LJL36600TU43X	LLL36600TU43X	
Micrologic Energy	LSI	5.3E	400 A	LDL36400TU53X	LGL36400TU53X	LJL36400TU53X	LLL36400TU53X	
			600 A	LDL36600TU53X	LGL36600TU53X	LJL36600TU53X	LLL36600TU53X	
Micrologic Ammeter	LSIG	6.3A	400 A	LDL36400TU44X	LGL36400TU44X	LJL36400TU44X	LLL36400TU44X	
			600 A	LDL36600TU44X	LGL36600TU44X	LJL36600TU44X	LLL36600TU44X	
Micrologic Energy	LSIG	6.3E	400 A	LDL36400TU54X	LGL36400TU54X	LJL36400TU54X	LLL36400TU54X	
			600 A	LDL36600TU54X	LGL36600TU54X	LJL36600TU54X	LLL36600TU54X	

Table 3.13: L-Frame 3 Pole, 600 A Circuit Breaker Frame without Terminations or Trip Unit (600 Vac, 50/60 Hz) *[13]*

Ampere Rating	Interrupting Rating			
	D	G	J	L
250 A (70–250 A)	LDF36000F25	LGF36000F25	LJF36000F25	LLF36000F25
400 A (125–400 A	LDF36000F40	LGF36000F40	LJF36000F40	LLF36000F40
600 A (200–600 A)	LDF36000F60	LGF36000F60	LJF36000F60	LLF36000F60

Table 3.14: Termination Options

Termination Letter	Termination Option
A	I-Line (See Section 9)
F	No lugs (includes terminal nut kit on both ends)
L	Lugs both ends
M	Lugs ON end, terminal nut kit OFF end
P	Lugs OFF end, terminal nut kit ON end
N	Plug In
D	Drawout
S	Rear Connected

For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.
J G **L** 3 6 2 5 0 or L G **L** 3 6 6 0 0 U 4 4 X

Accessories see Digest Section 7
Optional Lugs see Digest Section 7
Dimensions see Digest Section 7

Table 3.15: L-Frame 3P Field-Installable Micrologic Electronic Trip Units

Electronic Trip Unit			Continuous Current	Trip Unit Cat. No.
Type	Function	Code		
Micrologic Standard	LI	3.3	70-80-100-125-150-175-200-225-250	LE3250U31X
			125-150-175-200-225-250-300-350-400	LE3400U31X
			200-225-250-300-350-400-450-500-600	LE3600U31X
	LSI	3.3S	70-80-100-125-150-175-200-225-250	LE3250U33X
			125-150-175-200-225-250-300-350-400	LE3400U33X
			200-225-250-300-350-400-450-500-600	LE3600U33X
Micrologic Ammeter	LSI	5.3A	125–400	LE3400U43X
			200–600	LE3600U43X
	LSIG	6.3A	125–400	LE3400U44X
			200–600	LE3600U44X
Micrologic Energy	LSI	5.3E	125–400	LE3400U53X
			200–600	LE3600U53X
	LSIG	6.3E	125–400	LE3400U54X
			200–600	LE3600U54X

Table 3.16: L-Frame Interrupting Ratings

Voltage	Interrupting Rating			
	D	G	J	L
240 Vac	25 kA	65 kA	100 kA	125 kA
480 Vac	18 kA	35 kA	65 kA	100 kA
600 Vac	14 kA	18 kA	25 kA	50 kA

[10] J and L interrupts are UL Certified as current limiting.
[11] Circuit breakers will be labeled with Line and Load markings and are not suitable for reverse connections.
[12] Only available on 3P unit-mount circuit breakers. Not allowed on I-Line constructions. For 100% rated field-interchangeable circuit breakers, replace the “T” suffix with an “R”. 100% field-interchangeable circuit breakers are not allowed on 600 A I-Line, ,Plug-In, or Drawout constructions.
[13] See Digest Section 7 for lug and termination kits.

Automatic Switches

Automatic molded case switches open instantaneously at a factory preset magnetic trip point, calibrated to protect only the molded case switch itself, when it is subjected to high fault currents. The trip point is nonadjustable and provides no overload or low level fault protection.

Molded case switches open when the handle is switched to the OFF position or in response to an auxiliary tripping device such as a shunt trip.

All molded case switches will accept the same lugs and accessories as equivalent thermal-magnetic circuit breakers, with the exception of Q-frame switches which do not have electrical accessories available.

Automatic molded case switches are UL Listed per UL 489 and are CSA Certified.

Table 3.17: Q-Frame (240 Vac) PowerPact™ Automatic Molded Case Switches

Circuit Breaker	Poles	Ampere Rating	J Interrupting Rating		Terminal	Wire Range
			Cat. No.	Trip Point		
Q-Frame *[1]*	2	225 A	QBL22000S22	4500 A		4 AWG–300 kcmil
	3	225 A	QBL32000S22	4500 A		

[1] Withstand rating of 10 kA at 240 Vac.

FAL 1P
15–100 A

FAL/FHL 2P
15–100 A

FAL/FHL 3P
15–100 A

F-Frame Circuit Breakers Ending Production in 2018–2019

PowerPact B-Frame 15–125 A molded case circuit breakers are the designated replacement for F-frame applications. The PowerPact B-frame features increased capacity, a smaller size in unit mount, same size in I-Line applications to ease retrofit, and a flexible range of field-installable accessories, auxiliaries and operators.

F-Frame Molded Case Circuit Breakers

Thermal-magnetic molded case circuit breakers shown here are permanent trip UL Listed, CSA Certified, IEC rated, and also meet the requirements of Federal Specification W–C–375B/GEN as indicated in Digest Section 7.

NOTE: Consider using PowerPact™ circuit breakers for situations requiring circuit breaker accessories. See Digest Section 7 for more information.

Table 3.18: Termination Option

Termination Letter
F = No Lugs
L = Lugs both ends
P with MT Suffix = Lugs ON end
P = Lugs OFF end
F A **L** 3 6 1 0 0 For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.

Table 3.19: F-Frame—100 A, Thermal-Magnetic, Individually-Mounted, Standard Interrupting, 240 Vac

Ampere Rating	Fixed AC Magnetic Trip		Cat. No.			Terminal Wire Range (AWG)
	Hold	Trip	1 P 120 Vac	2 P 240 Vac	3 P 240 Vac	
15 A	275 A	600 A	FAL12015	FAL22015	FAL32015	AL50FA 14–4 Cu or 12–4 Al
20 A	275 A	600 A	FAL12020	FAL22020	FAL32020	
25 A	275 A	600 A	FAL12025	FAL22025	FAL32025	
30 A	275 A	600 A	FAL12030	FAL22030	FAL32030	
35 A	400 A	850 A	FAL12035	FAL22035	FAL32035	AL100FA 14–1/0 Cu or 12–1/0 Al
40 A	400 A	850 A	FAL12040	FAL22040	FAL32040	
45 A	400 A	850 A	FAL12045	FAL22045	FAL32045	
50 A	400 A	850 A	FAL12050	FAL22050	FAL32050	
60 A	800 A	1450 A	FAL12060	FAL22060	FAL32060	
70 A	800 A	1450 A	FAL12070	FAL22070	FAL32070	
80 A	800 A	1450 A	FAL12080	FAL22080	FAL32080	
90 A	900 A	1700 A	FAL12090	FAL22090	FAL32090	
100 A	900 A	1700 A	FAL12100	FAL22100	FAL32100	

Table 3.20: F-Frame—100 A, Thermal-Magnetic, Individually-Mounted, 480 Vac

Ampere Rating	Fixed AC Magnetic Trip		Standard Interrupting Cat. No.			Terminal
	Hold	Trip	1P 277 Vac, 125 Vdc	2P 480 Vac, 250 Vdc	3P 480 Vac, 250 Vdc	
15 A	275 A	600 A	FAL14015	FAL24015	FAL34015	AL50FA (1) 14–4 Cu or (1) 12–4 Al
20 A	275 A	600 A	FAL14020	FAL24020	FAL34020	
25 A	275 A	600 A	FAL14025	FAL24025	FAL34025	
30 A	275 A	600 A	FAL14030	FAL24030	FAL34030	
35 A	400 A	850 A	FAL14035	FAL24035	FAL34035	AL100FA (1) 14–1/0 Cu or (1) 12–1/0 Al
40 A	400 A	850 A	FAL14040	FAL24040	FAL34040	
45 A	400 A	850 A	FAL14045	FAL24045	FAL34045	
50 A	400 A	850 A	FAL14050	FAL24050	FAL34050	
60 A	800 A	1450 A	FAL14060	FAL24060	FAL34060	
70 A	800 A	1450 A	FAL14070	FAL24070	FAL34070	
80 A	800 A	1450 A	FAL14080	FAL24080	FAL34080	
90 A	900 A	1700 A	FAL14090	FAL24090	FAL34090	
100 A	900 A	1700 A	FAL14100	FAL24100	FAL34100	

Table 3.21: F-Frame—100 A, Thermal-Magnetic, Individually-Mounted, 600 Vac

Ampere Rating	Fixed AC Magnetic Trip		Cat. No.							Terminal Wire Range (AWG)
			Standard Interrupting		High Interrupting			Current Limiting		
	Hold	Trip	2P 600 Vac, 250 Vdc	3P 600 Vac, 250 Vdc	1P 277 Vac, 125 Vdc	2P 600 Vac, 250 Vdc	3P 600 Vac, 250 Vdc	2P 600 Vac, 250 Vdc	3P 600 Vac, 250 Vdc	
15 A	275 A	600 A	FAL26015	FAL36015	FHL16015	FHL26015	FHL36015	—	—	AL50FA 14–4 Cu or 12–4 Al
20 A	275 A	600 A	FAL26020	FAL36020	FHL16020	FHL26020	FHL36020	FIL26020	FIL36020	
25 A	275 A	600 A	FAL26025	FAL36025	FHL16025	FHL26025	FHL36025	FIL26025	FIL36025	
30 A	275 A	600 A	FAL26030	FAL36030	FHL16030	FHL26030	FHL36030	FIL26030	FIL36030	
35 A	400 A	850 A	FAL26035	FAL36035	FHL16035	FHL26035	FHL36035	FIL26035	FIL36035	AL100FA 14–1/0 Cu or 12–1/0 Al
40 A	400 A	850 A	FAL26040	FAL36040	FHL16040	FHL26040	FHL36040	FIL26040	FIL36040	
45 A	400 A	850 A	FAL26045	FAL36045	FHL16045	FHL26045	FHL36045	FIL26045	FIL36045	
50 A	400 A	850 A	FAL26050	FAL36050	FHL16050	FHL26050	FHL36050	FIL26050	FIL36050	
60 A	800 A	1450 A	FAL26060	FAL36060	FHL16060	FHL26060	FHL36060	FIL26060	FIL36060	
70 A	800 A	1450 A	FAL26070	FAL36070	FHL16070	FHL26070	FHL36070	FIL26070	FIL36070	
80 A	800 A	1450 A	FAL26080	FAL36080	FHL16080	FHL26080	FHL36080	FIL26080	FIL36080	
90 A	900 A	1700 A	FAL26090	FAL36090	FHL16090	FHL26090	FHL36090	FIL26090	FIL36090	
100 A	900 A	1700 A	FAL26100	FAL36100	FHL16100	FHL26100	FHL36100	FIL26100	FIL36100	

Accessories see page 3-19 through page 3-26
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Table 3.22: Interrupting Ratings

Voltage	FAL			FHL	FCL *[1]*	FIL
	240 Vac	480 Vac	600 Vac			
240 Vac	10 kA	18 kA (1P), 25 kA (2P, 3P)	25 kA	25 kA (1P), 65 kA (2P, 3P)	100 kA	200 kA
480 Vac	—	18 kA	18 kA	25 kA (2P, 3P)	65 kA	200 kA
600 Vac	—	—	14 kA	18 kA (2P, 3P)	—	100 kA

[1] See Section 11.

FA 1P
1.5 in. (38 mm)
Mounting Height

FA 2P
3 in. (76 mm)
Mounting Height

FA 3P
5.5 in. (114 mm)
Mounting Height

F-Frame I-Line Circuit Breakers

NOTE: Consider using PowerPact™ circuit breakers for situations requiring circuit breaker accessories. See Digest Section 7 for more information.

Table 3.23: F-Frame—100 A, Thermal-Magnetic, I-Line™ Construction, 240 Vac, Standard Interrupting

Ampere Rating	Fixed AC Magnetic Trip		Cat. No.		Terminal Wire Range (AWG)
	Hold	Trip	2 P *[2]* 240 Vac	3 P 240 Vac	
15 A	275 A	600 A	FA22015( )	FA32015	AL50FA 14–4 Cu or 12–4 Al
20 A	275 A	600 A	FA22020( )	FA32020	
25 A	275 A	600 A	FA22025( )	FA32025	
30 A	275 A	600 A	FA22030( )	FA32030	
35 A	400 A	850 A	FA22035( )	FA32035	AL100FA 14–1/0 Cu or 12–1/0 Al
40 A	400 A	850 A	FA22040( )	FA32040	
45 A	400 A	850 A	FA22045( )	FA32045	
50 A	400 A	850 A	FA22050( )	FA32050	
60 A	800 A	1450 A	FA22060( )	FA32060	
70 A	800 A	1450 A	FA22070( )	FA32070	
80 A	800 A	1450 A	FA22080( )	FA32080	
90 A	900 A	1700 A	FA22090( )	FA32090	
100 A	900 A	1700 A	FA22100( )	FA32100	

Table 3.24: F-Frame—100 A, Thermal-Magnetic, I-Line Construction, 480 Vac

Ampere Rating	Fixed AC Magnetic Trip		Standard Interrupting			Terminal Wire Range (AWG)
	Hold	Trip	1P *[2][3]* 277 Vac, 125 Vdc	2P *[2]* 480 Vac, 250 Vdc	3P 480 Vac, 250 Vdc	
15 A	275 A	600 A	—	FA24015( )	FA34015	AL50FA (1) 14–4 Cu or (1) 12–4 Al
20 A	275 A	600 A	—	FA24020( )	FA34020	
25 A	275 A	600 A	—	FA24025( )	FA34025	
30 A	275 A	600 A	—	FA24030( )	FA34030	
35 A	400 A	850 A	FA14035( )	FA24035( )	FA34035	AL100FA (1) 14–1/0 Cu or (1) 12–1/0 Al
40 A	400 A	850 A	FA14040( )	FA24040( )	FA34040	
45 A	400 A	850 A	FA14045( )	FA24045( )	FA34045	
50 A	400 A	850 A	FA14050( )	FA24050( )	FA34050	
60 A	800 A	1450 A	FA14060( )	FA24060( )	FA34060	
70 A	800 A	1450 A	FA14070( )	FA24070( )	FA34070	
80 A	800 A	1450 A	FA14080( )	FA24080( )	FA34080	
90 A	900 A	1700 A	FA14090( )	FA24090( )	FA34090	
100 A	900 A	1700 A	FA14100( )	FA24100( )	FA34100	

Table 3.25: F-Frame—100 A, Thermal-Magnetic, I-Line™ Construction, 600 Vac

Ampere Rating	Fixed AC Magnetic Trip		Cat. No.						Terminal Wire Range (AWG)
			Standard Interrupting		High Interrupting			Current Limiting		
	Hold	Trip	2P *[2]* 600 Vac, 250 Vdc	3 P 600 Vac, 250 Vdc	1P *[2][3]* 277 Vac, 125 Vdc	2P *[2]* 600 Vac, 250 Vdc	3P 600 Vac, 250 Vdc	2P *[2]* 600 Vac, 250 Vdc	3P 600 Vac, 250 Vdc	
15 A	275 A	600 A	FA26015( )	FA36015	FH16015( )	FH26015( )	FH36015	—	—	AL50FA 14–4 Cu or 12–4 Al
20 A	275 A	600 A	FA26020( )	FA36020	FH16020( )	FH26020( )	FH36020	FI26020( )	FI36020	
25 A	275 A	600 A	FA26025( )	FA36025	FH16025( )	FH26025( )	FH36025	—	—	
30 A	275 A	600 A	FA26030( )	FA36030	FH16030( )	FH26030( )	FH36030	FI26030( )	FI36030	
35 A	400 A	850 A	FA26035( )	FA36035	FH16035( )	FH26035( )	FH36035	—	—	AL100FA 14–1/0 Cu or 12–1/0 Al
40 A	400 A	850 A	FA26040( )	FA36040	FH16040( )	FH26040( )	FH36040	FI26040( )	FI36040	
45 A	400 A	850 A	FA26045( )	FA36045	FH16045( )	FH26045( )	FH36045	—	—	
50 A	400 A	850 A	FA26050( )	FA36050	FH16050( )	FH26050( )	FH36050	FI26050( )	FI36050	
60 A	800 A	1450 A	FA26060( )	FA36060	FH16060( )	FH26060( )	FH36060	FI26060( )	FI36060	
70 A	800 A	1450 A	FA26070( )	FA36070	FH16070( )	FH26070( )	FH36070	FI26070( )	FI36070	
80 A	800 A	1450 A	FA26080( )	FA36080	FH16080( )	FH26080( )	FH36080	FI26080( )	FI36080	
90 A	900 A	1700 A	FA26090( )	FA36090	FH16090( )	FH26090( )	FH36090	FI26090( )	FI36090	
100 A	900 A	1700 A	FA26100( )	FA36100	FH16100( )	FH26100( )	FH36100	FI26100( )	FI36100	

Table 3.26: Phase Options

Phase Option Letter	1P	2P	3P
A B C	FA14035A FA14035B FA14035C	—	—
AB AC BC	—	FA24030AB FA24030AC FA24030BC	—
ABC CBA	—	—	FA34030 FA34030CBA

Table 3.27: Interrupting Ratings

Voltage	FA			FH	FC*[4]*	FI
	240 Vac	480 Vac	600 Vac			
240 Vac	10 kA	18 kA (1P), 25 kA (2P, 3P)	25 kA	25 kA (1P) 65 kA (2P, 3P)	100 kA	200 kA
277 Vac	—	18 kA	—	—	65 kA	—
480 Vac	—	18 kA	18 kA	25 kA (2P, 3P)	65 kA	200 kA
600 Vac	—	—	14 kA	18 kA (2P, 3P)	—	100 kA

Accessories see page 3-19 through page 3-26
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Dimensions see page 3-28
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[2] 1P and 2P circuit breaker catalog numbers are completed by adding the required phase connection letters as a suffix. See Phase Option Table.
[3] Rated 277 Vac, 125 Vdc, 15–30 A circuit breaker suitable for use with 60°C or 75°C conductors. 35–100 A circuit breakers are suitable for use with 75°C conductors.
[4] See Section 11.

Q4L
2P and 3P
250–400 A

Q4 2P and 3P
6 in. (152 mm)
Mounting Height

Q4-Frame

NOTE: Consider using PowerPact™ circuit breakers for situations requiring circuit breaker accessories. See Digest Section 7 for more information.

Table 3.28: Q4-Frame—400 A, Thermal-Magnetic, Individually-Mounted, 240 Vac

Ampere Rating	Adjustable AC Magnetic Trip *[5]*		Standard Interrupting Cat. No.	Terminal Wire Range
	Low	High		
2P, 240 Vac				
250	1250 A	2500 A	Q4L2250	AL400LA (1) 1 AWG–600 kcmil Al or (2) 1 AWG–250 kcmil Al
300	1500 A	3000 A	Q4L2300	
350	1750 A	3500 A	Q4L2350	
400	2000 A	4000 A	Q4L2400	
3P, 240 Vac				
250	1250 A	2500 A	Q4L3250	AL400LA (1) 1 AWG–600 kcmil Al or (2) 1 AWG–250 kcmil Al
300	1500 A	3000 A	Q4L3300	
350	1750 A	3500 A	Q4L3350	
400	2000 A	4000 A	Q4L3400	

NOTE: Consider using PowerPact circuit breakers for situations requiring circuit breaker accessories. See Digest Section 7 for more information.

Table 3.29: Q4-Frame—400 A, Thermal-Magnetic, I-Line™ Construction, 240 Vac

Ampere Rating	Adjustable AC Magnetic Trip *[5]*		Standard Interrupting Cat. No.	Terminal Wire Range
	Low	High		
2P, 240 Vac*[6]*				
250	1250 A	2500 A	Q422250( )	AL400LA (1) 1 AWG–600 kcmil Al or (2) 1 AWG–250 kcmil Al
300	1500 A	3000 A	Q422300( )	
350	1750 A	3500 A	Q422350( )	
400	2000 A	4000 A	Q422400( )	
3P, 240 Vac				
250	1250 A	2500 A	Q432250	AL400LA (1) 1 AWG–600 kcmil Al or (2) 1 AWG–250 kcmil Al
300	1500 A	3000 A	Q432300	
350	1750 A	3500 A	Q432350	
400	2000 A	4000 A	Q432400	

Table 3.30: Interrupting Ratings

Voltage	KI	Q4
240 Vac	200 kA	25 kA
480 Vac	200 kA	—
600 Vac	100 kA	—

Accessories see page 3-19 through page 3-26
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Dimensions see page 3-28
Enclosures see Digest Section 7

[5] UL magnetic trip setting tolerances are ±25% for low and ±20% for high from nominal value shown.
[6] 2P and 3P circuit breaker catalog numbers are completed by adding the required phase connection letters as a suffix. See Phase Option Table.

LA/LHL
2P and 3P
125–400 A

L-Frame Molded Case Circuit Breaker

NOTE: Consider using PowerPact™ circuit breakers for situations requiring circuit breaker accessories. See Digest Section 7 for more information.

Table 3.31: L-Frame—600 A, Thermal-Magnetic, Individually-Mounted Circuit Breakers, 600 Vac

Ampere Rating	Adjustable AC Magnetic Trip		Cat. No.		Terminal Wire Range
	Low	High	Standard Interrupting	High Interrupting	
2P, 600 Vac, 250 Vdc					
125 A	625 A	1250 A	LAL26125	LHL26125	AL400LA (1) 1 AWG–600 kcmil Al or (2) 1 AWG–250 kcmil Al
150 A	750 A	1500 A	LAL26150	LHL26150	
175 A	875 A	1750 A	LAL26175	LHL26175	
200 A	1000 A	2000 A	LAL26200	LHL26200	
225 A	1125 A	2250 A	LAL26225	LHL26225	
250 A	1250 A	2500 A	LAL26250	LHL26250	
300 A	1500 A	3000 A	LAL26300	LHL26300	
350 A	1750 A	3500 A	LAL26350	LHL26350	
400 A	2000 A	4000 A	LAL26400	LHL26400	
3P, 600 Vac, 250 Vdc					
125 A	625 A	1250 A	LAL36125	LHL36125	AL400LA (1) 1 AWG–600 kcmil Al or (2) 1 AWG–250 kcmil Al
150 A	750 A	1500 A	LAL36150	LHL36150	
175 A	875 A	1750 A	LAL36175	LHL36175	
200 A	1000 A	2000 A	LAL36200	LHL36200	
225 A	1125 A	2250 A	LAL36225	LHL36225	
250 A	1250 A	2500 A	LAL36250	LHL36250	
300 A	1500 A	3000 A	LAL36300	LHL36300	
350 A	1750 A	3500 A	LAL36350	LHL36350	
400 A	2000 A	4000 A	LAL36400	LHL36400	

Table 3.32: Interrupting Ratings

Voltage	LAL	LHL	LCL	LIL
240 Vac	42 kA	65 kA	100 kA	200 kA
480 Vac	30 kA	35 kA	65 kA	200 kA
600 Vac	22 kA	25 kA	35 kA	100 kA

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Mag-Gard Motor Circuit Protector

Instantaneous trip magnetic only circuit breakers have a single adjustment which simultaneously sets the magnetic trip level of each individual pole. Mag-Gard circuit breakers comply with NEC® requirements for providing motor circuit protection when installed as part of a UL Listed combination controller having motor overload protection. Interrupting ratings are established for these UL Recognized Components only when they are used in combination with motor starters with properly sized overload relays and contactors.

Mag-Gard circuit breakers will accept the same lugs and accessories as equivalent thermal-magnetic circuit breakers.

Table 3.33: Magnetic Only LAL Mag-Gard, 400 A, 600 Vac, 50/60 Hz *[7]*

Ampere Rating		Adjustable *[8]* Trip Range	Cat. No. 3P Only
GJL *[9]*	3	9–33 A	GJL36003M01
	7	21–77 A	GJL36007M02
	15	45–165 A	GJL36015M03
	30	90–330 A	GJL36030M04
	50	150–550 A	GJL36050M05
	75	225–825 A	GJL36075M06

NOTE: Each ampere rating can be ordered with any designated trip range for the frame by adding the proper suffix to the catalog numbers.

Table 3.34: Special Low Mags Magnetic Trip Settings for PowerPact H- and J-Frame Thermal Magnetic Circuit Breakers 70–125 A

Amps	Special Low Mags		Ii on Label	Mag Suffix	Interrupting Rating			
	Hold *[10]*	Trip *[10]*			D	G	J	L
70	400	850	625	H83	HDL36070H83	HGL36070H83	HJL36070H83	HLL36070H83
80	400	850	625	H83	HDL36080H83	HGL36080H83	HJL36080H83	HLL36080H83
90	400	850	625	H83	HDL36090H83	HGL36090H83	HJL36090H83	HLL36090H83
100	400	850	625	H83	HDL36100H83	HGL36100H83	HJL36100H83	HLL36100H83
110	400	850	625	H83	HDL36110H83	HGL36110H83	HJL36110H83	HLL36110H83
125	800	1450	1125	H84	HDL36125H84	HGL36125H84	HJL36125H84	HLL36125H84

Table 3.35: Special High Mags Magnetic Trip Settings for PowerPact H- and J-Frame Thermal Magnetic Circuit Breakers

Amps	Special High Mags		Ii on Label	Mag Suffix	Interrupting Rating			
	Hold *[10]*	Trip *[10]*			D	G	J	L
90	900	1700	1300	H85	HDL36090H85	HGL36090H85	HJL36090H85	HLL36090H85

Table 3.36: Special Low Mags Magnetic Trip Settings for PowerPact H- and J-Frame Thermal Magnetic Circuit Breakers 150–200 A

Amps	Special Low Mags		Ii on Label	Mag Suffix	Interrupting Rating			
	Low *[11]*	High *[11]*			D	G	J	L
150	875L	1750H		H29	JDL36150H29	JGL36150H29	JJL36150H29	JLL36150H29
200	1250L	2500H		H32	JDL36200H32	JGL36200H32	JJL36200H32	JLL36200H32

Accessories see page 3-19 through page 3-26
Optional Lugs see page 3-25
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Table 3.37: H- and J-Frame Interrupting Ratings

Voltage	Interrupting Rating			
	D	G	J	L
240 Vac	25 KA	65 kA	100 kA	125 kA
480 Vac	18 kA	35 kA	65 kA	100 kA
600 Vac	14 kA	18 kA	25 kA	50 kA

[7] 250 Vdc ratings are available. No UL component recognition.
[8] UL magnetic trip setting tolerances are -20%/+30% from the nominal values shown.
[9] No GJL I-Line available.
[10] Hold and Trip indicate fixed magnetic trip levels
[11] Low and High refer to adjustable mag level setting.

GJL MCP Selection

Adjustable instantaneous-trip circuit breakers are intended for use in combination with motor starters with overload relays for the protection of motor circuits from short circuits. Other specific applications include rectifiers and resistance welders. These circuit breakers contain a magnetic trip element in each pole with the trip point adjustable from the front. Interrupting ratings are determined by testing the instantaneous-trip circuit breakers in combination with a contactor and overload relay.

Select instantaneous-trip circuit breakers as follows:

This selection table is suitable for motors, other than NEMA Design E, with locked-rotor indicating code letters per NEC® Table 430.7 (b) as follows:

Table 3.38: Locked-Rotor Indicating Codes

Horsepower	Motor Code letter
1/2 or less	A–L
3/4 to 1-1/2	A–K
2 to 3	A–J
5 to 25	A–H
30 to 125	A–G
150 or more	A–F

- For other motors order a special thermal-magnetic circuit breaker with magnetic trip settings for the specific motor— specify motor horsepower, voltage, frequency, full-load current and code letter or locked rotor current.
- Determine motor hp rating from the motor nameplate.
- Refer to the tables and select an instantaneous-trip circuit breaker with an ampere rating recommended for the hp and voltage involved.
- Select an adjustable trip setting of at least 800%, not to exceed 1300%, of the motor full-load amperes (FLA) for other than Design E motors. For Design E motors, select an adjustable trip setting of at least 1100% not to exceed 1700% of FLA.
- The NEC 1300% maximum setting may be inadequate for instantaneous-trip circuit breakers to withstand current surges typical of the magnetization current of autotransformer type reduced voltage starters, or open transition wye-delta starters during transfer from “start” to “run,” constant hp multi-speed motors, and motors labeled “high efficiency.” Select thermal-magnetic circuit breakers from Digest Section 7 for those applications.
- Part-winding motors, per NEC 430.3, should have two circuit breakers selected from the above at not more than one half the allowable trip setting for the horsepower rating. The two circuit breakers should operate simultaneously as a disconnecting means per NEC 430.103.
- Based on NEC 430.52 and NEC Table 430.150. See Digest Section 7 for a available Adjustable Instantaneous-Trip Circuit Breakers.