Section 7

Miniature and Molded Case Circuit Breakers

H-Frame

J-Frame

L-Frame

M-Frame

P-Frame

R-Frame

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		HOM Circuit Breakers									QO™ Circuit Breakers																								
																																				
Circuit Breaker Type	**Plug-on**	HOM		HOM-CAFI	HOM-DF	HOM-GFI		HOM-EPD		HOMT	QO			QO-H	QO-VH					QH		QOT	QO-CAFI	QO-VHCAFI	QO-DF	QOVH-DF	QO-GFI			QO-VHGFI	QO-EPD QO-EPE		
	Bolt-on	—	—	—	—	—	—	—	—	—	QOB			QOB-H	—	—	—	QOB-VH		QHB		—	QOB-CAFI	QOB-VHCAFI	QOB-DF	QOB-VHDF	QOB-GFI			QOB-VHGFI	QOB-EPD QOB-EPE		
	Unit Mount	—	—	—	—	—	—	—	—	—	—			—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Number of Poles		1	2	1, 2	1	1	2	1	2	1	1	2	3	2	1	2	3	1	2, 3 ▲	1,2	3	1	1, 2	1, 2	1	1	1	2	3	1	1	2	3
Current Range		15–50	15–200♦	15–20	15–20	15–20	15–50	15–20	15–50	15–50■	10–70	10–200♦	10–100	15–100	15–70	15–125	15–100	15–70	15–150	15–30	15–30	15–30	15–20	15–20	15–20	15–20	15–30	15–60	15–50	15–30	15–30	15–60	15–50
Interrupting Ratings																																			
UL/CSA Rating (kA) (50/60 Hz)	120 Vac	10	10	10	10	10	10	10	10	10	10	10	10	10	22	22	22	22	22	65	65	10	10	22	10	22	10	10	—	22	10	10	—
	120/240 Vac	10	10	—	—	—	10	—	10	10	10	10	10	10	22	22	22	22	22	65	65	10	—	—	—	—	—	10	—	—	—	10	—
	208Y/120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—
	240 Vac ★	—	—	—	—	—	—	—	—	—	—	—	10	10	—	—	22	—	22▼	—	65	—	—	—	—	—	—	—	—	—	—	—	10
	277 Vac	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	480Y/277 Vac	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DC Ratings	48 Vdc	—	—	—	—	—	—	—	—	—	5△	5 △	5 △	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	60 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	65 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	125 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	250 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
IEC 60947-2 (50/60 Hz)□	IEC (Icu)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Special Ratings																																			
CCC		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fed. Specs W-C-375B/GEN		X	X	X	X	X	X	X	X	X	X	—	—	—	X	—	—	—	—	X	—	X	X	—	X	X	X	—		—	X	—	
Other Standard		HACR ◊ NOM		HACR ◊							HACR☆ NOM			HACR ☆						—	—	—	HACR ☆	—	HACR ☆	HACR ☆	NOM			—	NOM		
Accessories and Modifications																																			
Shunt Trip ▽		—	—	—	—	—	—	—	—	—	X	X	X	X	X	X	X	X	X ◒	X	X	X	—	—	—	—	—	—	—	—	—	—	—	—	—
Undervoltage Trip		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Auxiliary Switches ▽		—	—	—	—	—	—	—	—	—	X	X	X	X	X	X	X	X	X ◒	X	X	X	—	X	—	—	X	X	X	X	X	X	X	X	X
Alarm Switch ▽		—	—	—	—	—	—	—	—	—	X	X	X	X	X	X	X	X	X ◒	X	X	X	—	X	—	—	X	X	X	X	X	X	X	X	X
Handle Operators		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Handle Padlock Attachment		X	X	X	X	—	—	—	—	X ✱	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trip System Type																																			
Thermal-magnetic		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Molded Case Switch		—	—	—	—	—	—	—	—	—	X	X	X	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dimensions (1P Unit Mount)																																			
Dimensions (1P Unit Mount) in. (mm)	Height	3.13 (79)									3.5 (89) ▲												4.75 (121)		4.75 (121)	4.75 (121)	4.12 (103)							
	Width	1.00 (25)									0.75 (19) ▲																								
	Depth	2.98 (76)									2.92 (74) ▲																								
Pages		Page 1-13									Pages 7-10, 7-11																								

▲ See page 7-54 for dimensions for: QOB2150VH, QOB3110VH, QOB3125VH and QOB3150VH.
■ HOMT tandem is 30 A maximum. HOMT quad tandem has 20 A maximum on outside poles, and 50 A maximum on the inside poles.
♦ AFI, EPD and GFI products are rated 60 Hz only.
★ See the Supplemental Digest Page 3-22 for 3Ø corner grounded systems.
▼ 22 kA @ 240 Vac for 3P only.
△ 1P and 2P, 10–70 A and 3P 10–60 A only.
□ See the Supplemental Digest Section 10 for circuit breakers with IEC ratings.
◊ HACR on HOM 1P 15–50 A and 2P 15–100 A
☆ HACR on QO, QOB 1P 10–70 A, 2P 15–100 A, 3P 10–100 A; QOB-VH 1P 15–70 A, 2P 15–125 A, 3P 15–100 A
▽ Factory-installed option only
◒ Factory-installed accessories are not available on QOB-VH 2P150 A and 3P 110–150 A
✱ Handle padlock attachment available for HOMT quad tandem only.
♦ 2P 150–200 A requires 4P width.

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		QOU Circuit Breakers				QOM1 and QOM2 Main Circuit Breakers		Multi 9™ Circuit Breakers and Supplementary Protectors								EDB Circuit Breakers					
																					
Circuit Breaker Type	Plug-on	—			—	—	—	—			—					—		—		—	
	Bolt-on	—			—	QOM1-VH	QOM2-VH	—			—					EDB		EGB		EJB	
	Unit Mount	QOU			QYU▲	—	—	UL 489 C60			UL1077 C60■			C60H-DC		—		—		—	
Number of Poles		1	2	3	1	2	2	1	2	3	1	2	3,4	1	2	1	2, 3	1	2, 3	1	2, 3
Current Range		10–100	10–125	10–100	10–30	50–125	100–225	0.5–35	0.5–35	0.5–35	0.5–63	1–63	1–63	0.5–40	0.5–40	15–70	15–125	15–70	15–125	15–70	15–125
Interrupting Ratings																					
UL/CSA Rating (kA RMS) (50/60 Hz)	120 Vac	10	10	10	—	22	22	10	—	—	10	10	10	—	—	25	25	65	65	100	100
	120/240 Vac	10	10	10	—	22	22	5	10	10	10	10	10	—	—	18	25	35	65	65	100
	240 Vac♦	—	—	10	—	—	—	5	10	10	10	10	10	—	—	18	25	35	65	65	100
	277 Vac	—	—	—	5	—	—	—	—	—	5	5	5	—	—	18	18	35	35	65	65
	480Y/277 Vac	—	—	—	—	—	—	10	10	10	—	5	5	—	—	—	18	—	35	—	65
DC Ratings	48 Vdc	5★	5★	5★	—	—	—	—	—	—	10	10	—	5	5	—	—	—	—	—	—
	60 Vdc	5▼	5▼	5▼	—	—	—	10	10	—	—	—	—	5	5	—	—	—	—	—	—
	65 Vdc	—	—	—	—	—	—	—	—	—	10	10	—	5	5	—	—	—	—	—	—
	125 Vdc	—	—	—	—	—	—	—	10	—	—	10	—	5	5	—	—	—	—	—	—
	250 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	5	5	—	—	—	—	—	—
	500 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	—	5◒	—	—	—	—	—	—
IEC 60947-2 (50/60 Hz) Icu	240 Vac	—	—	—	—	—	—	20	20	20	10	10	10	20	10	20	—	—	—	—	—
	415 Vac	—	—	—	—	—	—	—	10	10	—	5	5	—	—	10	—	—	—	—	—
Special Ratings																					
CCC		X✱	X✱	X✱	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fed. Specs W-C-375B/GEN		X	X	X	X	X	X	X	X	X	—	—	—	—	—	X	X	X	X	X	X
Other Standard		HACR △			—	—	—	—	—	—	□	—	—	—	—	HACR					
Accessories and Modifications																					
Shunt Trip		X◊	X◊	X◊	X◊	—	X ◊	X	X	X	X	X	X	X	X	X ◊	X ◊	X ◊	X ◊	X ◊	X ◊
Undervoltage Trip		—	—	—	—	—	—	X	X	X	X	X	X	X	X	—	—	—	—	—	—
Auxiliary Switches		X◊	X◊	X◊	X◊	—	—	X	X	X	X	X	X	X	X	X◊	X◊	X◊	X◊	X◊	X◊
Alarm Switch		X◊	X◊	X◊	X◊	—	—	X	X	X	X	X	X	X	X	X◊	X◊	X◊	X◊	X◊	X◊
Handle Operators		—	—	—	—	—	—	X	X	X	X	X	X	X	X	—	—	—	—	—	—
Handle Padlock Attachment		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trip System Type																					
Thermal-magnetic		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Molded Case Switch		—	X	X	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dimensions (1P Unit Mount)																					
Dimensions (1P Unit Mount) in. (mm)	Height	4.05 (103)				5.09 (129)☆	5.60 (142)☆	4.21 (107)▽			3.19 (81)			3.19 (81)		5.66 (144)					
	Width	0.75 (19)				5.00 (127)☆	5.07 (129)☆	0.71 (18)			0.71 (18)			0.71 (18)	1.42 (36)	0.98 (25)					
	Depth	2.92 (74)				3.47 (88)☆	3.60 (91)☆	2.76 (70)			2.76 (70)			2.56 (65)		4.05 (103)					
Pages		Pages 7-14				Pages 1-2		Pages 7-16 through 7-19								Page 9-17					

Note: All circuit breakers on this chart are UL Listed and CSA Certified unless otherwise noted.

- ▲ QYU is a UL 1077 supplementary protector.
- ■ C60 are recognized components per UL 1077.
- ♦ For information regarding 3Ø corner grounded systems see the Supplemental Digest. Page 3-22
- ★ 1P and 2P, 10–70 A and 3P 10–60 A only.
- ▼ QOU is UL Listed for 60 Vdc per pole 80–100 A, 1P; 80–125 A, 2P; and 70–100 A, 3P.
- △ HACR on QOU 1P and 3P 15–100 A, 2P 15–125 A;
- □ UL 489A for DC Telecom applications (1-pole only).
- ◊ Factory-installed option only
- ☆ QOM1 and QOM2 dimensions are for 2-pole unit.
- ▽ 480 V C60 height is 5.56 in. (141 mm).
- ◒ 2 poles must be wired in series for 500 Vdc.
- ✱ 15–70 A 1P and 2P, 15–60 A 3P

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		PowerPact™ 150 A H-Frame					PowerPact 250 A J-Frame				
		New! Electronic Trip Version 					New! Electronic Trip Version 				
Circuit Breaker Type		HD	HG	HJ	HL	HR	JD	JG	JJ	JL	JR
Number of Poles		2, 3	2, 3	2, 3▲	2, 3▲	3	2, 3▲	2, 3▲	2, 3▲	2, 3▲	3
Current Range		15–150 A	15–150 A	15–150 A	15–150 A	15–150 A	70–250 A■	70–250 A■	70–250 A■	70–250 A■	70–250 A■
Interrupting Ratings											
UL/CSA/NOM Rating (kA RMS) (50/60 Hz)	240 Vac	25	65	100	125	200	25	65	100	125	200
	480Y/277 Vac	18	35	65	100	200	18	35	65	100	200
	480 Vac	18	35	65	100	200	18	35	65	100	200
	600Y/347 Vac	14	18	25	50	100	14	18	25	50	100
	600 Vac	14	18	25	50	100	14	18	25	50	100
DC Ratings	250 Vdc♦	20	20	20	20	—	20	20	20	20	—
	500 Vdc♦	—	—	—	—	—	—	20	—	—	—
IEC Rating (kA RMS) Icu/Ics★	240 Vac	25/25	65/65	100/100	125/125	125/125	25/25	65/65	100/100	125/125	125/125
	415 Vac	18/18	35/35	65/65	100/100	100/100	18/18	35/35	65/65	100/100	100/100
IEC 50/60 Hz											
Special Ratings											
CCC		X	X	X	X	X	X	X	X	X	X
Fed. Specs W-C-375B/GEN		X	X	X	X	X	X	X	X	X	X
HACR (2P, 3P)		X	X	X	X	X	X	X	X	X	X
Connections/Terminations											
Unit Mount		X	X	X	X	X	X	X	X	X	X
I-Line™		X	X	X	X	X	X	X	X	X	X
Rear Connection		X▼	X▼	X	X	X	X	X	X	X	X
Drawout		X▼	X▼	X	X	X	X	X	X	X	X
Optional Lugs		X▼	X▼	X	X	X	X	X	X	X	X
Accessories and Modifications											
Shunt Trip		X	X	X	X	X	X	X	X	X	X
Undervoltage Trip		X	X	X	X	X	X	X	X	X	X
Auxiliary Switches		X	X	X	X	X	X	X	X	X	X
Alarm Switch		X	X	X	X	X	X	X	X	X	X
Motor Operator		X▼	X▼	X	X	X	X	X	X	X	X
Handle Operators		X▼	X▼	X	X	X	X	X	X	X	X
Mechanical Interlocks (3P)		X	X	X	X	X	X	X	X	X	X
Handle Padlock Attachment		X▼	X▼	X	X	X	X	X	X	X	X
Cylinder Lock (3P)		—	—	—	—	—	—	—	—	—	—
Optional GF Protection		—	—	—	—	—	—	—	—	—	—
Trip System Type											
Thermal-magnetic		X	X	X	X	—	X	X	X	X	X
Instantaneous-only (MCP)		—	—	X△	X△	X△	—	X△	X△	X	X
Molded Case Switch (Automatic)		X	X	X	X	X	X	X	X	X	X
Electronic		X△	X△	X△	X△	X△	X△	X△	X△	X△	X△
Enclosures (Pages 7-56–7-58)											
General Purpose (NEMA 1)		X	X	X	X	—	X	X	X	—	—
Raintight (NEMA 3R)		X	X	X	X	—	X	X	X	—	—
Dust-tight (NEMA 12)		X	X	X	X	—	X	X	X	—	—
Watertight (NEMA 4, 4X, 5)		X	X	X	X	—	X	X	X	—	—
Explosion Proof (NEMA 7, 9)		—	—	—	—	—	—	—	—	—	—
Dimensions (3P Unit Mount) in. (mm)	Height	6.4 (163)					7.5 (191)				
	Width	4.1 (104)					4.1 (104)				
	Depth	3.4 (86)					3.4 (86)				
Pages (Unit Mount)/(I-Line)		Pages 7-22, 7-23, 7-29, 7-34/9-25					Pages 7-22, 7-23, 7-29, 7-34, 7-35/9-25				

Note: All circuit breakers on this chart are UL Listed and CSA Certified unless otherwise noted.
- ▲ 2P in a 3P module.
- ■ 70–250 A with electronic trip system
- ♦ Not available with electronic trip units
- ★ Dual UL and IEC ratings and CE markings on circuit breakers. For additional IEC ratings, see the Supplemental Digest. Section 10
- ▼ Not available in HD and HG 2P rating (2P module).
- △ 3P only.

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		PowerPact 250 A Q-Frame				PowerPact 600 A L-Frame				
						New! 				
Circuit Breaker Type		QB	QD	QG	QJ	LD	LG	LJ	LL	LR
Number of Poles		2, 3	2, 3	2, 3	2, 3	3, 4	3, 4	3, 4	3, 4	3, 4
Current Range		70–250■	70–250■	70–250■	70–250■	70–600	70–600	70–600	70–600	70–600
Interrupting Ratings										
UL/CSA/NOM Rating (kA RMS) (50/60 Hz)	240 Vac	10	25	65	100	25	65	100	125	200
	480Y/277 Vac	—	—	—	—	18	35	65	100	200
	480 Vac	—	—	—	—	18	35	65	100	200
	600Y/347 Vac	—	—	—	—	14	18	25	50	100
	600 Vac	—	—	—	—	14	18	25	50	100
DC Ratings	250 Vdc☆	—	—	—	—	—	—	—	—	—
	500 Vdc♦☆	—	—	—	—	—	—	—	—	—
IEC Rating (kA RMS) Icu/Ics★	240 Vac	10/5	10/5	10/5	10/5	25/25	65/65	100/100	125/125	125/125
	415 Vac	10/5	10/5	10/5	10/5	18/18	35/35	65/65	100/100	100/100
IEC 50/60 Hz										
Special Ratings										
CCC		—	—	—	—	X	X	X	X	X
Fed. Specs W-C-375B/GEN		X	X	X	X	—	—	—	—	—
HACR (2P, 3P)		X	X	X	—	X	X	X	X	X
Connections/Terminations										
Unit Mount		X	X	X	X	X	X	X	X	X
I-Line™		X	X	X	X	X	X	X	X	X
Rear Connection		—	—	—	—	X	X	X	X	X
Drawout		—	—	—	—	X	X	X	X	X
Optional Lugs		—	—	—	—	X	X	X	X	X
Accessories and Modifications										
Shunt Trip		—	—	—	—	X	X	X	X	X
Undervoltage Trip		—	—	—	—	X	X	X	X	X
Auxiliary Switches		—	—	—	—	X	X	X	X	X
Alarm Switch		—	—	—	—	X	X	X	X	X
Motor Operator		—	—	—	—	X	X	X	X	X
Handle Operators		—	—	—	—	X	X	X	X	X
Mechanical Interlocks (3P)		X	X	X	X	X	X	X	X	X
Handle Padlock Attachment		X	X	X	X	X	X	X	X	X
Cylinder Lock (3P△)		—	—	—	—	—	—	—	—	—
Optional GF Protection▼		—	—	—	—	X	X	X	X	X
Trip System Type										
Thermal-magnetic		X	X	X	X	—	—	—	—	—
Instantaneous-only (MCP)		—	—	—	—	X	X	X	X	X
Molded Case Switch (Automatic)		X	—	—	—	—	X	—	X	X
Electronic		—	—	—	—	X	X	X	X	X
Enclosures (Pages 7-56–7-58)										
General Purpose (NEMA 1)		X	X	X	X	—	—	—	—	—
Raintight (NEMA 3R)		X	X	X	X	—	—	—	—	—
Dust-tight (NEMA 12)		—	—	—	—	—	—	—	—	—
Watertight (NEMA 4, 4X, 5)		—	—	—	—	—	—	—	—	—
Explosion Proof (NEMA 7, 9)		—	—	—	—	—	—	—	—	—
Dimensions (3P Unit Mount) in. (mm)	Height	6.47 (164)				13.38 (340)				
	Width	4.5 (114)				5.51 (140)				
	Depth	3.93 (100)				4.33 (110)				
Pages (Unit Mount)/(I-Line)		Pages 7-24/9-24				Pages 7-25/7-33				

Note: All circuit breakers on this chart are UL Listed and CSA Certified unless otherwise noted.

▲ 2P in a 3P module
■ I-Line Q-frame circuit breakers are available 70–225 A only. 250 A Q-frame unit-mount circuit breakers are limited to Cu conductors only.
♦ Ungrounded UPS systems only. See page 7-35. Special DC J-Frame only.
★ Dual UL and IEC ratings and CE markings on circuit breakers. For additional IEC ratings, see the Supplemental Digest, Section 10.
▼ Requires factory-installed "G" shunt trip and 3P module.
△ Factory-installed option only.
□ 3P only.
◊ 70–250 A with electronic trip system
☆ Not available with electronic trip units

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		PowerPact 800 A M-Frame		PowerPact 1200 A P-Frame				PowerPact 3000 A R-Frame			
											
Circuit Breaker Type		MG	MJ	PG	PJ	PK	PL	RG	RJ	RK	RL
Number of Poles		2, 3	2, 3	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4
Current Range		300–800	300–800	100–1200	100–1200	100–1200	100–1200	240–3000	240–3000	240–3000	240–3000
Interrupting Ratings											
UL/CSA/NOM Rating (kA RMS) (50/60 Hz)	240 Vac	65	100	65	100	65	125	65	100	65	125
	480Y/277 Vac	35	65	35	65	50	100	35	65	65	100
	480 Vac	35	65	35	65	50	100	35	65	65	100
	600Y/347 Vac	18	25	18	25	50	25	18	25	65	50
	600 Vac	18	25	18	25	50	25	18	25	65	50
DC Ratings	250 Vdc	—	—	—	—	—	—	—	—	—	—
	500 Vdc▲	—	—	—	—	—	—	—	—	—	—
IEC (kA RMS) Icu/Ics■	240 Vac	50/25	65/35	50/25	65/35	50/25	125/65	50/25	65/35	85/65	125/65
	415 Vac	35/20	50/25	35/20	50/25	50/25	85/45	35/20	50/25	70/55	85/45
IEC 50/60 Hz											
Special Ratings											
CCC		X	X	X	X	X	X	X	X	X	X
Fed. Specs W-C-375B/GEN		X	X	X	X	X	X	X	X	X	X
HACR (2P, 3P)		X	X	X	X	X	X	X	X	X	X
Connections/Terminations											
Unit Mount		X	X	X	X	X	X	X	X	X	X
I-Line™		X	X	X	X	X	X	X▼	X▼	X▼	X▼
Rear Connection		—	—	—	—	—	—	—	—	—	—
Drawout		—	—	X★	X★	X★	X★	—	—	—	—
Optional Lugs		X	X	X	X	X	X	X	X	X	X
Accessories and Modifications											
Shunt Trip		X	X	X	X	X	X	X	X	X	X
Undervoltage Trip		X	X	X	X	X	X	X	X	X	X
Auxiliary Switches		X	X	X	X	X	X	X	X	X	X
Alarm Switch		X	X	X	X	X	X	X	X	X	X
Motor Operator		—	—	X★	X★	X★	X★	—	—	—	—
Handle Operators		—	—	X★	X★	X★	X★	—	—	—	—
Mechanical Interlocks (3P)		—	—	X	X	X	X	—	—	—	—
Handle Padlock Attachment		X	X	X	X	X	X	X	X	X	X
Cylinder Lock (3P)		—	—	—	—	—	—	—	—	—	—
Optional GF Protection		—	—	X	X	X	X	X	X	X	X
Trip System Type											
Thermal-magnetic		—	—	—	—	—	—	—	—	—	—
Instantaneous-only (MCP)		—	—	—	X	X	—	—	—	—	—
Molded Case Switch (Automatic)		—	—	X	X	X	X	X	X	X	X
Electronic		X	X	X	X	X	X	X	X	X	X
Enclosures (Pages 7-56–7-58)											
General Purpose (NEMA 1)		X	X	X	X	X	X	—	—	—	—
Raintight (NEMA 3R)		X	X	X	X	X	X	—	—	—	—
Dust-tight (NEMA 12)		X	X	X	X	X	X	—	—	—	—
Watertight (NEMA 4, 4X, 5)		X	X	—	—	—	—	—	—	—	—
Explosion Proof (NEMA 7, 9)		—	—	—	—	—	—	—	—	—	—
Dimensions (3P Unit Mount)	Height–in. (mm)	12.80 (325)		16.20 (413)				15 (381)			
	Width—in. (mm)	8.30 (210)		8.30 (210)				16.50 (420)			
	Depth—in. (mm)	8.10 (205)		8.10 (205)				14.40 (366)			
Pages (Unit Mount)/(I-Line)		Page 7-26/9-28		Page 7-27, 7-31, 7-34/9-29				Page 7-28, 7-34/9-30			

Note: All circuit breakers on this chart are UL Listed and CSA Certified unless otherwise noted.

▲ Ungrounded UPS systems only. See page 7-35.
■ Dual UL and IEC ratings and CE markings on circuit breakers. For additional IEC ratings, see the Supplemental Digest, Section 10.
♦ Requires breaker with WB suffix
★ 65/50 kA Icu/Ics for 450–600 A ratings.
▼ 1000 A and 1200 A only..

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		Masterpact 1200 A					Masterpact 6000 A							
														
Circuit Breaker Type		NT-N	NT-H	NT-L1	NT-L	NT-LF ▲	NW-N	NW-H	NW-L	NW-LF ▲	NW-H	NW-L	NW-H	NW-L
Number of Poles		3, 4	3, 4	3	3	3	3, 4	3, 4	3	3	3, 4	3	3, 4	3
Current Range		100–1200	100–1200	100–1200	100–1200	100–1200	100–2000	100–2000	100–2000	100–2000	640–3000	640–3000	1200–6000	1200–6000
Interrupting Ratings														
UL/CSA/NOM Rating (kA RMS) (50/60 Hz)	240 Vac	50	65	100	200	200	65	100	200	200	100	200	100	200
	480Y/277 Vac	50	50	65	100	100	65	100	150	150	100	150	100	150
	480 Vac	50	50	65	100	100	65	100	150	150	100	150	100	150
	600Y/347 Vac	35	50	—	—	—	50	85	100	100	85	100	85	100
	600 Vac	35	50	—	—	—	50	85	100	100	85	100	85	100
DC Ratings	250 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	—
	500 Vdc	—	—	—	—	—	—	—	—	—	—	—	—	—
IEC■ (kA RMS) Icu/Ics	240 Vac	—	—	—	—	—	—	—	—	—	—	—	—	—
	415 Vac	—	—	—	—	—	—	—	—	—	—	—	—	—
Special Ratings														
CCC		—	—	—	—	—	—	—	—	—	—	—	—	—
Fed. Specs W-C-375B/GEN		—	—	—	—	—	—	—	—	—	—	—	—	—
HACR (2P, 3P)		—	—	—	—	—	—	—	—	—	—	—	—	—
Connections/Terminations														
Unit Mount		X	X	X	X	X	X	X	X	X	X	X	X	X
I-Line™		—	—	—	—	—	—	—	—	—	—	—	—	—
Rear Connection		X	X	X	X	X	X	X	X	X	X	X	X	X
Drawout		X	X	X	X	X	X	X	X	X	X	X	X	X
Optional Lugs		—	—	—	—	—	—	—	—	—	—	—	—	—
Accessories and Modifications														
Shunt Trip		X	X	X	X	X	X	X	X	X	X	X	X	X
Undervoltage Trip		X	X	X	X	X	X	X	X	X	X	X	X	X
Auxiliary Switches		X	X	X	X	X	X	X	X	X	X	X	X	X
Alarm Switch		X	X	X	X	X	X	X	X	X	X	X	X	X
Motor Operator		X	X	X	X	X	X	X	X	X	X	X	X	X
Handle Operators		—	—	—	—	—	—	—	—	—	—	—	—	—
Mechanical Interlocks		X	X	X	X	X	X	X	X	X	X	X	X	X
Padlock Attachment		X	X	X	X	X	X	X	X	X	X	X	X	X
Cylinder Lock		—	—	—	—	—	—	—	—	—	—	—	—	—
Optional GF Protection		X	X	X	X	X	X	X	X	X	X	X	X	X
Trip System Type														
Thermal-magnetic		—	—	—	—	—	—	—	—	—	—	—	—	—
Instantaneous-only (MCP)		—	—	—	—	—	—	—	—	—	—	—	—	—
Molded Case Switch (Automatic)		X	X	X	X	X	X	X	X	X	X	X	X	X
Electronic		X	X	X	X	X	X	X	X	X	X	X	X	X
Enclosures														
General Purpose (NEMA 1)		—	—	—	—	—	—	—	—	—	—	—	—	—
Raintight (NEMA 3R)		—	—	—	—	—	—	—	—	—	—	—	—	—
Dust-tight (NEMA 12)		—	—	—	—	—	—	—	—	—	—	—	—	—
Watertight (NEMA 4, 4X, 5)		—	—	—	—	—	—	—	—	—	—	—	—	—
Explosion Proof (NEMA 7, 9)		—	—	—	—	—	—	—	—	—	—	—	—	—
Dimensions (3P Unit Mount) in. (mm)	Height	12.67 (322)					17.28 (439)				17.28 (439)		17.28 (439)	
	Width	11.25 (286)					17.74 (450)				17.74 (450)		30.94 (786)	
	Depth	13.00 (331)					18.38 (467)				18.38 (467)		18.38 (467)	
Pages		Page 7-50 and Catalog 0613CT0001					Page 7-50 and Catalog 0613CT0001							

Note: All circuit breakers on this chart are UL Listed and CSA Certified unless otherwise noted.

▲ Tested to show arc flash hazard risk category as reference by NFPA70E.

■ See Catalog 0613CT0001 for additional ratings and other information.

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		100 A Frame						100 A F-Frame	
									
Circuit Breaker Type		FA (240 V)	FA		FH	FH■	FH	FI	FY
Number of Poles		1, 2, 3	1	2, 3	1	1	2, 3	2, 3	1
Current Range		15–100	15–100	15–100	15–30	35–100	15–100	20–100	15–30
Interrupting Ratings									
UL/CSA/NOM Rating (kA RMS) (50/60 Hz)	240 Vac	10◒	25◒	25	65	25	65	200	14
	480Y/277 Vac	—	18	18	65	25	25	200	14
	480 Vac	—	—	18	—	—	25	200	—
	600Y/347 Vac	—	—	14	—	—	18	100	—
	600 Vac	—	—	14	—	—	18	100	—
DC Ratings	250 Vdc✱	5♦	10♦	10	10♦	10♦	50	—	—
	500 Vdc▲✱	—	—	—	—	—	20	—	—
IEC Rating (kA RMS) Icu/Ics★	240 Vac	—	18/9	—	18/9	—	—	—	—
	415 Vac	10/2.5	10/2.5	10/2.5	10/2.5	10/2.5	10/2.5	6/1.5	—
IEC 50/60 Hz		For additional IEC ratings, see the Supplemental Digest, Section 10.						For additional IEC ratings, see the	
Special Ratings									
CCC		—	—	—	—	—	—	—	—
Fed. Specs W-C-375B/GEN		X	X	X	X	X	X	X	—
HACR (2P, 3P)		X	—	X	—	—	—	—	—
Connections/Terminations									
Unit Mount		X	X	X	X	X	X	X	—
I-Line™		X	X	X	X	X	X	X	X
Rear Connection		X	X	X	—	—	—	—	—
Drawout		—	—	—	—	—	—	—	—
Optional Lugs		X	X	X	X	X	X	X	—
Accessories and Modifications									
Shunt Trip		X△▼	—	X△	—	—	X△	X△	—
Undervoltage Trip		X△▼	—	X△	—	—	X△	X△	—
Auxiliary Switches		X△▼	—	X△	—	—	X△	X△	—
Alarm Switch		X△▼	X △	X△	X△	X△	X△	X△	—
Motor Operator		—	—	X	—	—	X	X	—
Handle Operators		X	—	X	X	X	X	—	—
Mechanical Interlocks (3P)		—	—	X	—	—	X	—	—
Handle Padlock Attachment		X	X	X	X	X	X	X	X
Cylinder Lock (3P△)		—	—	X	—	—	X	—	—
Optional GF Protection□		—	—	X	—	—	X	X	—
Trip System Type									
Thermal-magnetic		X	X	X	X	X	X	X	X
Instantaneous-only (MCP)		—	—	X	—	—	X	—	—
Molded Case Switch (Automatic)		—	—	—	—	—	X	—	—
Electronic		—	—	—	—	—	—	—	—
Enclosures (Pages 7-56–7-58)									
General Purpose (NEMA 1)		X	X	X	X	X	X	X	—
Raintight (NEMA 3R)		X	X	X	X	X	X	X	—
Dust-tight (NEMA 12)		X	X	X	X	X	X	X	—
Watertight (NEMA 4, 4X, 5)		X	X	X	X	X	X	X	—
Explosion Proof (NEMA 7, 9)		X	X	X	X	X	X	—	—
Dimensions (3P Unit Mount) in. (mm)	Height	6 (152)	6 (152)					8 (203)	
	Width	4.5 (114)	4.5 (114)					4.5 (114)	
	Depth	4.13 (105)	4.13 (105)					4.75 (121)	
Pages (Unit Mount)/(I-Line)		Supplemental Digest Section 3 / Pages 9-23	Supplemental Digest Section 3/Page 9-24					Supplemental Digest Section 3/Pages 9-24	

Note: All circuit breakers on this chart are UL Listed and CSA Certified unless otherwise noted.

▲ Ungrounded UPS systems only. See page 7-35.
■ 65 kA @120 Vac
♦ 1Ø 125 Vdc rating only.
★ Dual UL and IEC ratings and CE markings on circuit breakers. For additional IEC ratings, see the Supplemental Digest. Section 10
▼ Not available on 1P FA (240 V).
△ Factory-installed option only.
□ Requires factory-installed "G" Shunt trip and 3P module.
◊ Not available in HD and HG 2P rating (2P module).
☆ 2P in a 3P module.
▽ 3P only.
◒ 1P FA is 120 Vac.
✱ Not available with electronic trip units

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		250 A K-Frame	400 A L-Frame			600 A L-Frame	
							
Circuit Breaker Type		KI	Q4	LA	LH	LI	LXI
Number of Poles		2, 3	2, 3	2, 3	2, 3	2, 3	3
Current Range		110–250	250–400	125–400	125–400	300–600	100–600
Interrupting Ratings							
UL/CSA/NOM Rating (kA RMS) (50/60 Hz)	240 Vac	200	25	42	65	200	200
	480Y/277 Vac	200	—	30	35	200	200
	480 Vac	200	—	30	35	200	200
	600Y/347 Vac	100	—	22	25	100	100
	600 Vac	100	—	22	25	100	100
DC Ratings	250 Vdc	—	—	10	50	—	—
	500 Vdc▲	—	—	—	20	—	—
IEC 60947-2 (kA RMS) Icu/Ics■	240 Vac	—	—	—	—	—	—
	415 Vac	130/65	—	20/5	20/5	—	—
IEC 50/60 Hz		For additional IEC ratings, see the Supplemental Digest Section 10.					
Special Ratings							
CCC		—	—	—	—	—	—
Fed. Specs W-C-375B/GEN		X	X	X	X	X	X
HACR (2P, 3P)		—	—	X	X	—	—
Connections/Terminations							
Unit Mount		X	X	X	X	X	X
I-Line™		X	X	X	X	X	X
Rear Connection		—	X	X	X	—	—
Drawout		—	—	—	—	—	—
Optional Lugs		X	X	X	X	X	X
Accessories and Modifications							
Shunt Trip		X♦	X	X	X	X	
Undervoltage Trip		X♦	X	X	X	X	X
Auxiliary Switches		X♦	X	X	X	X	X
Alarm Switch		X♦	X	X	X	X	X
Motor Operator		X	X	X	X	—	—
Handle Operators		—	X	X	X	—	—
Mechanical Interlocks (3P)		—	—	X★	X★	—	—
Handle Padlock Attachment		X	X	X	X	X	X
Cylinder Lock (3P)		—	X	X	X	—	—
Optional GF Protection		X▼♦	—	—	—	—	X★
Trip System Type							
Thermal-magnetic		X	X	X	X	X	
Instantaneous-only (MCP)		—	—	X	X	—	—
Molded Case Switch (Automatic)		—	—	—	X	—	—
Electronic		—	—	—	—	—	X
Enclosures (Pages 7-56–7-58)							
General Purpose (NEMA 1)		—	X	X	X	—	
Raintight (NEMA 3R)		X	X	X	X	—	—
Dust-tight (NEMA 12)		X	X	X	X	X	X
Watertight (NEMA 4, 4X, 5)		X	X	X	X	—	—
Explosion Proof (NEMA 7, 9)		—	—	—	—	—	—
Dimensions (3P Unit Mount) in. (mm)	Height	8 (203)	11 (279)			11.86 (301)	
	Width	4.5 (114)	6 (152)			7.5 (190)	
	Depth	4.75 (121)	5.84 (148)			6.74 (171)	
Pages (Unit Mount)/(I-Line)		Supplemental Digest Section 3 / Pages 9-26	Supplemental Digest Section 3 / Pages 9-27			Supplemental Digest Section 3 / Pages 9-27	

Note: All circuit breakers on this chart are UL Listed and CSA Certified unless otherwise noted.

▲ Ungrounded UPS systems only. See page 7-35.
■ Dual UL and IEC ratings and CE markings on circuit breakers. For additional IEC ratings, see the Supplemental Digest, Section 10.
♦ Factory-installed option only.
★ Requires circuit breaker with WB suffix .
▼ Requires factory-installed "G" Shunt trip. Available only for 3P.
△ 65/50 kA Icu/Ics for 450 A–600 A ratings

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QO™ miniature circuit breakers are plug-on products for use in QO load centers, NQOD panelboards, NQOD OEM interiors or Speed-D™ switchboard distribution panels. Bolt-on QOB circuit breakers are for use in NQOD panelboards or interiors.▲
The QO exclusive Qwik-Open™ mechanism, with a trip reaction within 1/60th of a second, is standard on all 1P 15 A and 20 A QO circuit breakers.


QO 1P
1 Space Required


QOT 1P Tandem
1 Space Required


QO 2P
2 Spaces Required


QO2200 2P 200 A
4 Spaces Required


QO 3P
3 Spaces Required

Table 7.1: Plug-On Circuit Breakers

Amperes Rating ■	1P—120/240 Vac		2P—120/240 Vac Common Trip		2P—240 Vac ♦ Common Trip		3P—240 Vac Common Trip	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
10 k AIR								
10 A	QO110	**29.10**	QO210	**67.00**	—	—	QO310	**248.00**
15 A	QO115★▼	**29.10**	QO215★	**67.00**	QO215H	**200.00**	QO315★	**248.00**
20 A	QO120★▼	**29.10**	QO220★	**67.00**	QO220H	**200.00**	QO320★	**248.00**
25 A	QO125★	**29.10**	QO225★	**67.00**	QO225H	**200.00**	QO325★	**248.00**
30 A	QO130★	**29.10**	QO230★	**67.00**	QO230H	**200.00**	QO330★	**248.00**
35 A	QO135★	**29.10**	QO235★	**67.00**	—	—	QO335★	**248.00**
40 A	QO140★	**29.10**	QO240★	**67.00**	QO240H	**200.00**	QO340★	**248.00**
45 A	QO145★	**29.10**	QO245★	**67.00**	—	—	QO345★	**248.00**
50 A	QO150★	**29.10**	QO250★	**67.00**	QO250H	**200.00**	QO350★	**248.00**
60 A	QO160★	**29.10**	QO260★	**67.00**	QO260H	**200.00**	QO360★	**248.00**
70 A	QO170★	**67.00**	QO270★	**134.00**	QO270H	**224.00**	QO370★	**315.00**
80 A	—	—	QO280★	**189.00**	QO280H	**315.00**	QO380★	**366.00**
90 A	—	—	QO290★	**189.00**	QO290H	**315.00**	QO390★	**366.00**
100 A	—	—	QO2100★	**189.00**	QO2100H	**315.00**	QO3100★	**366.00**
110 A	—	—	QO2110★	**428.00**	—	—	—	—
125 A	—	—	QO2125★	**428.00**	—	—	—	—
150 A	—	—	QO2150★△◒	**491.00**	—	—	—	—
175 A	—	—	QO2175★△◒	**491.00**	—	—	—	—
200 A	—	—	QO2200★△◒	**491.00**	—	—	—	—
Molded Case Switch 60 A max.–240 Vac			—	—	QO200	**70.00**	QO300	**248.00**
Molded Case Switch 100 A max.–240 Vac			—	—	QO2000☆	**200.00**	QO3000☆	**366.00**
22 k AIR★								
15 A	QO115VH▼	**63.00**	QO215VH□	**146.00**	—	—	QO315VH□	**371.00**
20 A	QO120VH▼	**63.00**	QO220VH□	**146.00**	—	—	QO320VH□	**371.00**
25 A	QO125VH	**73.00**	QO225VH□	**146.00**	—	—	QO325VH□	**371.00**
30 A	QO130VH	**73.00**	QO230VH□	**146.00**	—	—	QO330VH□	**371.00**
40 A	QO140VH	**73.00**	QO240VH□	**146.00**	—	—	QO340VH□	**371.00**
50 A	QO150VH	**73.00**	QO250VH□	**146.00**	—	—	QO350VH□	**371.00**
60 A	QO160VH	**73.00**	QO260VH□	**146.00**	—	—	QO360VH□	**371.00**
70 A	QO170VH	**112.00**	QO270VH□	**224.00**	—	—	QO370VH□	**477.00**
80 A	—	—	QO280VH□	**315.00**	—	—	QO380VH□	**530.00**
90 A	—	—	QO290VH□	**315.00**	—	—	QO390VH□	**530.00**
100 A	—	—	QO2100VH□◊	**315.00**	—	—	QO3100VH□	**530.00**
110 A	—	—	QO2110VH□◊	**1034.00**	—	—	—	—
125 A	—	—	QO2125VH□◊	**1034.00**	—	—	—	—
150 A	—	—	QO2150VH△□◒	**1061.00**	—	—	—	—
175 A	—	—	QO2175VH△□◒	**1061.00**	—	—	—	—
200 A	—	—	QO2200VH△□◒	**1061.00**	—	—	—	—
42 k AIR★								
40 A	—	—	QOH240☆	**317.00**	—	—	—	—
45 A	—	—	QOH245☆	**317.00**	—	—	—	—
50 A	—	—	QOH250☆	**317.00**	—	—	—	—
60 A	—	—	QOH260☆	**317.00**	—	—	—	—
70 A	—	—	QOH270	**528.00**	—	—	—	—
80 A	—	—	QOH280	**651.00**	—	—	—	—
90 A	—	—	QOH290	**651.00**	—	—	—	—
100 A	—	—	QOH2100	**651.00**	—	—	—	—
110 A	—	—	QOH2110☆	**1389.00**	—	—	—	—
125 A	—	—	QOH2125	**1389.00**	—	—	—	—
65 k AIR★								
15 A	QH115▼	**117.00**	QH215	**293.00**	—	—	QH315★	**507.00**
20 A	QH120▼	**117.00**	QH220	**293.00**	—	—	QH320	**507.00**
25 A	QH125☆	**117.00**	QH225☆	**293.00**	—	—	QH325☆	**507.00**
30 A	QH130	**117.00**	QH230	**293.00**	—	—	QH330	**507.00**

▲ See Digest Section 1 for load centers, and Section 9 for panelboards and interiors.
■ 10–30 A circuit breakers are suitable for use with 60°C or 75°C conductors. 35–125 A circuit breakers are suitable for use with 75°C conductors.
♦ UL Listed 5 k AIR on corner grounded Delta systems.
★ UL Listed as HACR type for use with air conditioning, heating and refrigeration equipment having motor group combinations and marked for use with HACR type circuit breakers.
▼ UL Listed as SWD (switching duty) rated. Suitable for switching 120 Vac fluorescent lighting loads.
△ Requires four spaces (1 AWG–300 kcmil Al/Cu.) Suitable for switching 120 Vac fluorescent lighting loads.
□ UL Listed for use ahead of QO, QO-GFI, QO-EPD, QO-AFI, QOT,QOCAFI, and QO-PL 10 k AIR circuit breakers to permit their application at 22 kA fault level.
◊ 100 A maximum branch mounted opposite.
☆ Order only. Contact your local Field Office.
▽ Includes two circuit breakers (one QO2030 and one QO3020) and handle tie QOTHT.
◒ Not suitable for use in 3Ø panels. Use only in 1Ø panel rated 150 A or greater.

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Table 7.2: QO-QOB Ring Terminal (20% $ Price Adder)—Factory Installed Only

Ampere Rating	Poles	Suffix
10–30 A	1, 2, 3	5237
35–60 A	1,2	5238
35–50 A	3	
70–110 A	2	5273
60–100 A	3	

Table 7.3: Wire Sizes■

Circuit Breaker Type	Ampere Rating	Wire Size (AWG/kcmil)
QO 1P	10–30 A	14–8 Al/Cu
	10–30 A	(2) 14–10 Cu
	35–70 A	8–2 Al/Cu
QO 2P	10–30 A	14–8 Al/Cu
	10–30 A	(2) 14–10 Cu
	35–70 A	8–2 Al/Cu
	80–125 A	4–2/0 Al/Cu
	150–200 A	4–300 Al/Cu
QO 3P	10–30 A	14–8 Al/Cu, (2) 14-10 Cu
	35–70 A	8–2 Al/Cu
	80–125 A	4–2/0 Al/Cu
QOB-VH	110–150 A	4–300 Al/Cu
QOT	15–20 A	12–8 Al 14–8 Cu
QO-AFI, QO-GFI & QO-EPD	15–30 A	12–8 Al 14–8 Cu
	40, 50, 60 A	12–4 Al 14–6 Cu
QO-PL	10–60 A	12–2 Al 14–2 Cu

Table 7.4: QOT Tandem Circuit Breakers

Ampere Rating■	Cat. No.★	$ Price
1P—120/240 Vac		
15 A & 15 A	QOT1515	**58.00**
15 A & 20 A	QOT1520	**58.00**
20 A & 20 A	QOT2020	**58.00**
2P—120/240 Vac		

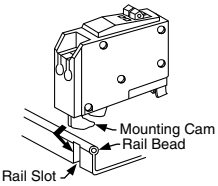
Order two QOT1515 or QOT2020 circuit breakers and handle tie QOTHT for common switching of center two poles.

Table 7.5: Replacement Tandem Circuit Breakers

For Use in Old Style Non-Class CTL QO Load Centers—10 k AIR

Ampere Rating■	Cat. No.★	$ Price
1P—120/240 Vac—1 Space Required		
15 &A 15 A	QO1515	**73.00**
15 A & 20 A	QO1520	**73.00**
20 A & 20 A	QO2020	**73.00**
20 A & 30 A	QO2030	**73.00**
30 A & 20 A	QO3020	**73.00**
Two 1P Individual Trip—120/240 Vac—2 Spaces Required		
15 A & 15 A	Order Two QO1515 or QO2020 circuit breakers and handle tie QOTHT for common switching of center two poles.	
15 A & 20 A		
20 A & 20 A	—	—
20 A & 30 A	QO20303020▽	**134.00**
30 A & 20 A	—	—

QOT Tandem



Circuit limiting QOT tandem circuit breakers have a mounting cam as shown. Installation into a QO load center can only be made in those positions having a mounting pan rail slot. Meets Paragraph 408.15 of the NEC®. UL Listed as Class CTL

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1P
QO-CAFI


1P
QO-PCAFI

New! QO™ Arc-Fault Circuit Breaker (Pigtail and Plug-On Neutral)

QO arc-fault circuit breakers provide protection for Series and Parallel Type Arcing as required by the NEC and local code adoption, and comply with UL1699.

Table 7.6: QO Arc Fault Circuit Breakers▲

Circuit Breaker Type	Ampere Rating	One-Pole 1P 120 Vac 10 k AIR 1 Space Required Cat. No.	$ Price	1P 120 Vac 22 k AIR 1 Space Required Cat. No.	$ Price
Combination Arc-fault Interrupter (Pigtail Neutral)	15 A	QO115CAFI	282.00	QO115VHCAFI	534.00
	20 A	QO120CAFI	282.00	QO120VHCAFI	534.00
Plug-On Neutral Arc-Fault Interrupter	15 A	QO115PCAFI	282.00	QO115VHPCAFI	534.00
	20 A	QO120PCAFI	282.00	QO120VHPCAFI	534.00

Circuit Breaker Type	Ampere Rating	Two-Pole 2P 120/240 Vac 10 k AIR 2 Space Required Cat. No.	$ Price	2P 120/240 Vac 22 k AIR 2 Space Required Cat. No.	$ Price
Combination Arc-Fault Interrupter (Pigtail Neutral)	15 A	QO215CAFI	636.00	QO215VHCAFI	1068.00
	20 A	QO220CAFI	636.00	QO220VHCAFI	1068.00


1P
QO-DF


1P
QO-PDF

New! QO™ Dual Function Circuit Breaker

QO Combination Arc Fault and Ground Fault Circuit Interrupters (Dual Function) provide overload and short circuit protection, plus arc fault and ground fault protection in a single device in accordance with the NEC, UL1699 and UL943.

Table 7.7: QO Dual Function Circuit Breakers

Circuit Breaker Type	Ampere Rating	1P 120 Vac 10 k AIR 1 Space Required Cat. No.	$ Price	1P 120 Vac 22 k AIR 1 Space Required Cat. No.	$ Price
Combination Arc-fault and Ground Fault Circuit Interrupter with Pigtail Neutral	15 A	QO115DF	326.00	QO115VHDF	578.00
	20 A	QO120DF	326.00	QO120VHDF	578.00
Plug-On Neutral Combination Arc-fault and Ground Fault Circuit Interrupter	15 A	QO115PDF	326.00	QO115VHPDF	578.00
	20 A	QO120PDF	326.00	QO120VHPDF	578.00


Two-wire
QO-SWN


Three-wire
QO-SWN

QO-GFI

Qwik-Gard™ circuit breakers provide overload and short circuit protection, combined with Class A ground fault protection. Class A denotes a ground fault circuit interrupter that will trip when a fault current to ground is 6 mA or more, for people protection. Do not connect to more than 250 feet of load conductor for the total one-way run to prevent nuisance tripping.

Table 7.8: QO-GFI Circuit Breakers

Ampere Rating♦ (A)	Qwik-Gard Circuit Breakers With Ground Fault Circuit Interrupter 1P 120 Vac 10 k AIR 1 Space Required Cat. No.	$ Price	1P 120 Vac 22 k AIR 1 Space Required Cat. No.	$ Price	2P Common Trip 120/240 Vac 10 k AIR 2 Spaces Required Cat. No.	$ Price	3P Common Trip 208Y/120 Vac 10 k AIR 3 Spaces Required Cat. No.	$ Price
15	QO115GFI	233.	QO115VHGFI	482.	QO215GFI	413.	QO315GFI	791.
20	QO120GFI	233.	QO120VHGFI	482.	QO220GFI	413.	QO320GFI	791.
25	QO125GFI	233.	QO125VHGFI	482.	QO225GFI	413.	—	—
30	QO130GFI	233.	QO130VHGFI	482.	QO230GFI	413.	QO330GFI	791.
40	—	—	—	—	QO240GFI	413.	QO340GFI	791.
50	—	—	—	—	QO250GFI	413.	QO350GFI	791.
60	—	—	—	—	QO260GFI★	413.	—	—


1P
QO-GFI


2P
QO-GFI


3P
QO-GFI

QO-EPD/EPE

QO-EPD/EPE circuit breakers provide overload and short circuit protection combined with Class B ground fault protection. They are designed to provide ground fault protection of equipment at a 30 milliampere level (EPD) or 100 milliamp level (EPE). They are not designed to protect people from electrical shock.

Table 7.9: QO-EPD Circuit Breakers

Ampere Rating♦ (A)	1P 120 Vac 10 k AIR 1 Space Required Cat. No.	$ Price	2P Common Trip 120/240 Vac 10 k AIR 2 Spaces Required Cat. No.	$ Price	3P Common Trip 240 Vac 10 k AIR 3 Spaces Required Cat. No.	$ Price	Cat. No.	$ Price
15	QO115EPD	410.	QO215EPD	660.	QO315EPD▼	1077.	QO315EPE▼	1077.
20	QO120EPD	410.	QO220EPD	660.	QO320EPD▼	1077.	QO320EPE▼	1077.
25	QO125EPD	410.	QO225EPD	660.	—	—	—	—
30	QO130EPD	410.	QO230EPD	660.	QO330EPD▼	1077.	QO330EPE▼	1077.
40	—	—	QO240EPD	660.	QO340EPD▼	1077.	QO340EPE▼	1077.
50	—	—	QO250EPD	660.	QO350EPD▼	1077.	QO350EPE▼	1077.
60	—	—	QO260EPD★	660.	—	—	—	—


QO 1P
With Shunt Trip

QO-SWN

Switch Neutral Common Trip 2008 NEC™ 514.11

Table 7.10: QO-SWN Circuit Breakers

Ampere Rating♦	2 Wire 120 Vac 10 k AIR 2 Spaces Required Cat. No.	$ Price	3 Wire 120/240 Vac 10 k AIR 3 Spaces Required Cat. No.	$ Price
10 A	QO210SWN	95.00	—	—
15 A	QO215SWN	95.00	QO315SWN	143.00
20 A	QO220SWN	95.00	QO320SWN	143.00
25 A	QO225SWN	95.00	—	—
30 A	QO230SWN	95.00	QO330SWN	143.00
40 A	QO240SWN	95.00	QO340SWN	143.00
50 A	QO250SWN	95.00	QO350SWN	143.00

QO-HID

HID circuit breakers are for use on circuits feeding fluorescent and high intensity discharge (HID) lighting systems such as mercury vapor, metal halide, or high pressure sodium. These circuit breakers are physically interchangeable with QO circuit breakers.

Table 7.11: QO-HID Circuit Breakers

Ampere Rating♦	1P 120/240 Vac 10 k AIR 1 Space Required Cat. No.	$ Price	2P Common Trip 120/240 Vac 10 k AIR 2 Spaces Required Cat. No.	$ Price	3P Common Trip 240 Vac 10 k AIR 3 Spaces Required Cat. No.	$ Price
15 A	QO115HID■	38.10	QO215HID	87.00	QO315HID	300.00
20 A	QO120HID■	38.10	QO220HID	87.00	QO320HID	300.00
25 A	QO125HID	38.10	QO225HID	87.00	QO325HID	300.00
30 A	QO130HID	38.10	QO230HID	87.00	QO330HID	300.00
40 A	QO140HID	38.10	QO240HID	87.00	—	—
50 A	QO150HID	38.10	QO250HID	87.00	—	—

NOTE: *QO-K Circuit Breakers are on page 7-63.*

QO-HM

High magnetic trip circuit breakers are recommended for applications where high initial inrush may occur and for individual dimmer applications.

Table 7.12: QO-HM Circuit Breakers

Ampere Rating♦	1P Cat. No	$ Price
120 Vac—10 k AIR		
15 A	QO115HM▲■	30.60
20 A	QO120HM▲■	30.60

Non-automatic (Standard) Miniature Switches

Miniature non-automatic switches have the same physical packaging as miniature circuit breakers, but open only when the handle is switched to the OFF position.

Non-automatic switches provide no overcurrent protection or short circuit protection. They must not be used on systems that have an available fault current greater than the values listed in the table.

Non-automatic switches are UL Listed per UL 1087 and are CSA certified.

Table 7.13: QO Non-Automatic Miniature Switches, 240 Vac 10 kA

Ampere Rating	2P Cat. No.	$ Price	3P Cat. No.	$ Price
60 A	QO200	70.00	QO300	248.00
100 A	QO2000	200.00	QO3000	366.00

▲ UL Listed as HACR type for use with air conditioning, heating and refrigeration equipment having motor group combinations and marked for use with HACR type circuit breakers.
■ UL Listed as SWD (switching duty) rated. Suitable for switching 120 Vac fluorescent lighting loads.
♦ 10–30 A circuit breakers are suitable for use with 60° C or 75° C conductors. 35–60 A circuit breakers are suitable for use with 75° C conductors.
★ Suitable only for feeding 240 Vac and 208 Vac two-wire loads. Does not contain load neutral connection.
▼ See note in Instruction Bulletin when using in an enclosure with a QO403 or QON prefix.

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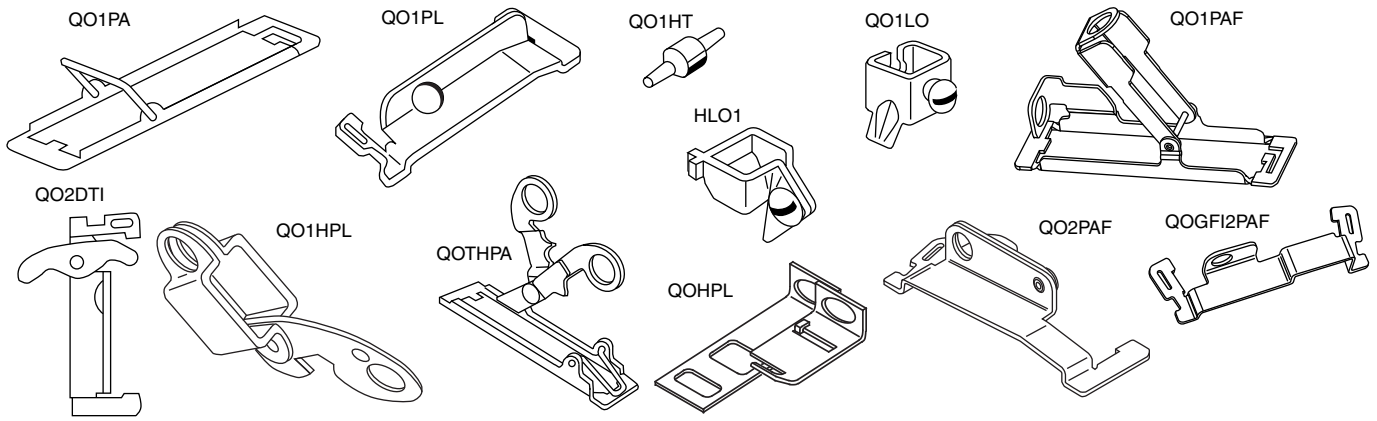
Table 7.14: Accessories for Use with QO™ and QOB Miniature Circuit Breakers

Handle Attachments	Description	Cat. No.	$ Price	Schedule
Handle Tie:	Converts any two adjacent 120/240 Vac 1P QO circuit breakers to independent trip 2P	QO1HT	3.80	DE2E
	Converts any two adjacent 120/240 Vac 1P side-by-side QOT circuit breakers to independent trip 2P	QOTHT	3.80	DE2E
	Handle tie and lock-off for three 1P QO, QOB circuit breakers	QO3HT	13.40	DE2E
Handle Clamp:	Clamp for holding QO 1P handle in ON or OFF position	QO1LO	3.80	DE2E
	Clamp for holding QO or Q1 1P, 2P or 3P circuit breaker handles in ON or OFF position	HLO1	9.90	DE2E
Handle Padlock Attachment: for Padlocking in ON or OFF position	For padlocking 1P QO circuit breaker in ON or OFF position			
	Loose attachment	QOHPL	9.50	DE2E
	Fixed attachment	QO1PA	10.70	DE2E
	For padlocking 1P side-by-side QOT circuit breaker in ON or OFF position	QOTHPA	11.10	DE2E
	For padlocking 2P and 3P QO-GFI, QO-EPD, and QO-EPE in either ON or OFF position, fixed attachment.	GFI2PA	9.20	DE2A
	For 2P and 3P QO and Q1 standard circuit breakers which require padlocking in either ON or OFF position.			
	Loose attachment	QO1HPL	10.70	DE2E
	Fixed attachment	QO1PL	10.70	DE2E
Handle Padlock Attachment: for Padlocking in OFF position	For padlocking 1P QO circuit breaker in OFF position only, fixed attachment.	QO1PAF	43.50	DE2E
	For padlocking 2P and 3P QO circuit breakers in OFF position only, fixed attachment.	QO2PAF	25.80	DE2E
	For padlocking 1P QO-GFI, QO-AFI, QO-CAFI, QO-PCAFI, and QO-EPD circuit breakers in OFF position only, fixed attachment.	QOGFI1PAF	51.00	DE2E
	For padlocking 2P and 3P QO-GFI, QO-EPD, and QO-EPE circuit breakers in OFF position only, fixed attachment.	QOGFI2PAF	38.40	DE2E
Ring Terminal	Ring terminals are available as a factory-installed option.	See Page 7-10	+20% Price Adder	DE2A
Sub-Feed Lugs	60 A 2P plug-on – 2 spaces required (6–2 Al/Cu)	QO60SL	47.10	DE2A
	125 A 2P plug-on – 2 spaces required (12–2/0 Al/Cu)	QO2125SL	137.00	DE2A
	225 A 2P plug-on – 4 spaces required (4–300 Al/Cu)	QO2225SL▲	308.00	DE2A
	125 A 3P plug-on – 3 spaces required (12–2/0 Al/Cu)	QO3125SL	137.00	DE3
Mechanical Interlock Attachment	For interlocking the handles of two 2P or one 2P and one 1P QO and Q1 circuit breakers mounted side-by-side so that only one circuit breaker can be ON at a time (Not QOU)	QO2DTI	24.90	DE2E
With Retaining Kit:	QO2DTI mechanical interlock attachment with retaining kits for securing two adjacent back-fed circuit breakers in dual power supply applications. Can be used with (2) 2Ps or (1) 2P and (1) 1P QO circuit breakers in QO816L100 load centers.	QO2DTIM	63.00	DE2E

▲ Not suitable for use in 3Ø panels. Use only in 1Ø panel rated 150 A or greater.



Factory-Installed Accessories for Use with QO and QOB Miniature Circuit Breakers

Factory-installed electrical accessories take up an additional pole space on QO™, QO-GFI, QO-EPD, QO-SWN and QOU circuit breakers. All AC electrical accessories shown below are rated for 50/60 Hz. Accessories are not available for QOB-VH (2P 150 A and 3P 110–150 A) circuit breakers or QO, QOU molded case switches. QO circuit breakers will accept only one accessory per circuit breaker. Undervoltage trip is not available on miniature circuit breakers. Factory-installed accessories are not available for QO-AFI, QO-CAFI or OQ-PCAFI Arc Fault Circuit Breakers or on QO2150, QO2175, or QO2200 circuit breakers.

Table 7.15: Factory-Installed Accessories

Accessory	Description	Rated Voltage		Coil Burden	Cat. No. Suffix	$ Price Adder
Shunt Trip	Trips the circuit breaker from a remote location by means of a trip coil energized from a separate circuit. A 120 Vac shunt trip will operate at 55% or more of rated voltage. All other shunt trips will operate at 75% or more of rated voltage. **Application** • For use with momentary or maintained push button. • Not available on QO-GFI, QO-EPD, QO-AFI, QO-CAFI, QO-PCAFI. • Shunt trip terminals accept (2) 14–12 AWG Cu.	AC/DC	12	60 VA	-1042	189.00
			24	168 VA		
		AC	120	72 VA	-1021	189.00
			208	228 VA		
			240	288 VA		

Accessory	Description	Contact Comb.	Max. Voltage	Max. Load	Cat. No. Suffix	$ Price Adder
Auxiliary Switches	Monitors circuit breaker contact status and provides a remote signal indicating the circuit breaker contacts are OPEN or CLOSED. **Application** • Auxiliary switch terminals accept (2) 14–12 AWG Cu leads.	1A	AC 120	5 A	-1200	132.00
		1B	AC 120	5 A	-1201	132.00
Alarm Switches	Used with control circuits and is actuated only when the circuit breaker has tripped. Standard construction includes a normally-open contact. **Application** • Alarm switch terminals accept (2) 14–12 AWG Cu leads.	1A	AC 120	5 A	-2100	132.00

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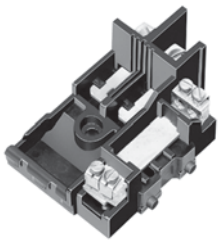
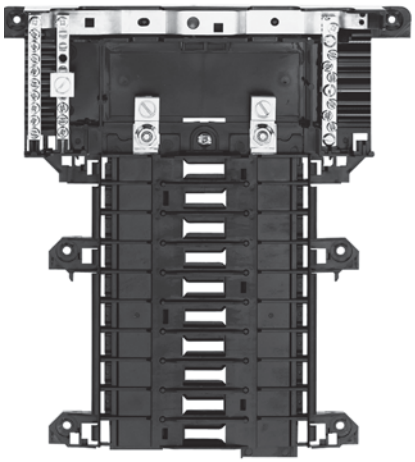


QON2L40



QON120L125I

Table 7.16: QO OEM Mounting Bases—UL Recognized Components

Voltage System	Main Lug Rating	1P Spaces	Max. No. 1P	Mounting Bases Cat. No.	Mounting Bases $ Price	Main Wire Size AWG/kcmil
QO Plug-On Mounting Bases—For unit mounting QO, QO-GFI, QO-AFI and QO-EPD circuit breakers						
1Ø2W 240 Vac Max. 10 k AIC (Without Neutral Assembly)	70 A	2	2	QON2L70	**27.30**	14–4 Cu, 12–3 Al
	125 A	4	4	SK9948BW	**75.00**	12–1/0 Cu/Al
	125 A	4	4	SK9842	**78.00**	12–1/0 Cu/Al
	125 A	6	6	SK9795	**84.00**	12–1/0 Cu/Al
	125 A	6	6	SK9801	**108.00**	12–1/0 Cu/Al
	150 A	6	6	SK9796BW	**131.00**	8–3/0 Cu/Al
	150 A	8	8	SK9797	**140.00**	8–3/0 Cu/Al
1Ø3W 240 Vac Max. 10 k AIC	40 A	2	2	QON2L40	**35.00**	14–6 Cu, 12–6 Al
	70 A	2	4	QON24L70	**50.00**	14–4 Cu, 12–3 Al
	100 A	6	12	QON612L100	**70.00**	8–1/0 Cu/Al
	100 A	8	16	QON816L100	**92.00**	8–1/0 Cu/Al
	100 A	12	12	QON12L100	**113.00**	12–2/0 Cu/Al
	100 A	12	12	QON12L100SF■	**161.00**	6–2/0 Cu/Al
	125 A	12	12	QON112L125I	**120.00**	4–2/0 Cu/Al
	125 A	12	24	QON11224L125I	**168.00**	4–2/0 Cu/Al
	125 A	16	16	QON116L125I	**131.00**	4–2/0 Cu/Al
	125 A	16	24	QON11624L125I	**191.00**	4–2/0 Cu/Al
	125 A	20	20	QON120L125I	**225.00**	4–2/0 Cu/Al
	125 A	24	24	QON124L125I	**263.00**	6–2/0 Cu/Al
	125 A	32	32	QON132L125I	**360.00**	4–2/0 Cu/Al
	125 A	20	24	QON12024L125I	**263.00**	4–2/0 Cu/Al
	150 A	24	24	QON124L150I	**263.00**	4–250 Cu/Al
	200 A	12	12	QON124L200I	**339.00**	4–250 Cu/Al
	200 A	12	12	QON12L200FTL♦	**500.00**	4–250 Cu/Al
	200 A	24	24	QON124L200I	**339.00**	4–250 Cu/Al
	200 A	24	24	QON124L200DL★	**500.00**	(2) 4–300 Cu/Al
	200 A	30	30	QON130L200I	**417.00**	4–250 Cu/Al
	225 A	42	42	QON142L225I	**599.00**	4–300 Cu/Al
3Ø3W 240 Vac Max. 10 k AIC (Without Neutral Assy.)	125 A	12	12	QON312L125	**251.00**	4–2/0 Cu/Al
	125 A	20	20	QON320L125	**380.00**	4–2/0 Cu/Al
	125 A	24	24	QON324L125	**395.00**	4–2/0 Cu/Al
	200 A	18	18	QON318L200	**327.00**	4–300 Cu/Al
	200 A	24	24	QON324L200	**402.00**	4–300 Cu/Al
	200 A	30	30	QON330L200	**477.00**	4–300 Cu/Al
	225 A	42	42	QON342L225	**674.00**	4–300 Cu/Al
3Ø4W 240 Vac Max. 10 k AIC	60 A	3	3	QON403L60N	**49.80**	12–6 Cu/Al
	125 A	12	12	QON312L125I	**281.00**	4–2/0 Cu/Al
	125 A	20	20	QON320L125I ▲	**441.00**	4–2/0 Cu/Al
	125 A	24	24	QON324L125I	**461.00**	4–2/0 Cu/Al
	200 A	18	18	QON318L200I	**426.00**	4–300 Cu/Al
	200 A	24	24	QON324L200I	**468.00**	4–300 Cu/Al
	200 A	30	30	QON330L200I ▲	**528.00**	4–300 Cu/Al
	225 A	42	42	QON342L225I	**716.00**	4–300 Cu/Al
QO Plug-On Mounting Bases—For unit mounting QO, QO-GFI and QO-EPD circuit breakers						
1Ø2W 240 Vac Max. 10 k AIC (Without Neutral Assembly)	70 A	1	1	QOMB1	**29.60**	14–4 Cu 12–2 Al
	70 A	2	2	QOMB2	**59.00**	14–4 Cu 12–2 Al
	70 A	3	3	QOMB3	**87.00**	14–4 Cu 12–2 Al
QOB Bolt-On Mounting Bases—For unit mounting QOB, QOB-GFI, QOB-EPD circuit breakers						
3Ø3W 240 Vac Max.10 k AIC (Without Neutral Assembly)	100 A	3	3	QON3B	**56.00**	12–1 Cu/Al

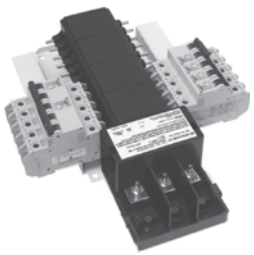
▲ Also IEC rated and CE marked for IEC 60439-1. Use only Square D brand Type QOXC, QOXD, QOHX and QOE circuit breakers for 415Y/240 Vac max. systems.
■ Device comes with factory-installed sub-feed lugs.
♦ Device comes with factory-installed feed-thru lugs.
★ Device comes with factory-installed dual-line lugs.

Table 7.17: Solid Neutral Assemblies

Main Lug Rating	Number of Branch Neutral Terminals	Cat. No.	$ Price	Main Neutral Lug Wire Size Cu/Al	Branch Neutral Terminal Wire Size Cu	Branch Neutral Terminal Wire Size Al
125 A	12	SN12125	**36.30**	4–2/0 AWG	14–4 AWG	12–4 AWG
125 A	20	SN20	**39.50**	4–2/0 AWG	14–4 AWG	12–4 AWG
200 A	12	SN12200	**40.70**	4 AWG–300 kcmil	14–4 AWG	12–4 AWG
200 A	30	SN30	**54.00**	4 AWG–300 kcmil	14–4 AWG	12–4 AWG
225 A	42	SN42	**63.00**	4 AWG–300 kcmil	14–4 AWG	12–4 AWG

Table 7.18: Multi-9 Mounting Bases for UL489 C60, 240 Vac max.

Description	Poles	Amperes	Length in.	Length mm	Cat. No.▼	$ Price
One-conductor Mounting Base	12	200 A	10.4	264	US11220018	**330.00**
	24		14.4	366	US12420018	**476.00**
	36		19	483	US13620018	**632.00**
	48		23	584	US14820018	**810.00**
	60		27.5	699	US16020018	**972.00**
Two-conductor Mounting Base	12	150 A	10.4	264	US21215018	**429.00**
	24	200 A	14.4	366	US22420018	**645.00**
	36		19	483	US23620018	**887.00**
	48		23	584	US24820018	**1140.00**
	60		27.5	699	US26020018	**1359.00**
Three-conductor Mounting Base	12	100 A	10.4	264	US31210018	**467.00**
	24	200 A	14.4	366	US32420018	**701.00**
	36		19	483	US33620018	**960.00**
	48		23	584	US34820018	**1245.00**
	60		27.5	699	US36020018	**1547.00**



US Mounting Base for UL489 C60 (3 conductor shown)

Table 7.19: Accessories for US Mounting Base for UL489 C60

Description	Cat. No.▼	$ Price
Main lug kit for US mounting bases, 1 lug per kit, for 6 AWG to 300 kcmil cable	USMBLK	**24.00**
Terminal cover for US mounting base; provides IP20 ingress protection per IEC 60529; suitable for jumper bars or cable	USMBTC	**49.50**

▼ DE2 Discount Schedule

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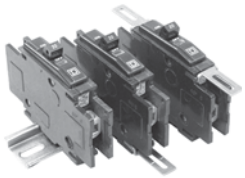

Low Ampere QOU

Low Ampere QOU Miniature Circuit Breakers

QOU unit mount miniature circuit breakers (cable-in/cable-out) are ideal for OEM applications. They have the Square D™ circuit breaker's unique Visi-Trip™ feature and can be DIN rail-mounted or surface- or flush-mounted using mounting feet.

General Specifications Common to All Low Ampere QOU Circuit Breakers

- For convenient flush mount, surface mount or DIN mount (symmetrical rail 35 x 7.5 DIN/EN 50 022)
- Single handle with internal common trip
- Terminal lug wire size (1) 14–2 AWG Cu or Al
- Reversible line and load lugs
- Field-installable quick connectors
- UL Listed 48 Vdc (5 k AIR)
- UL Listed as HACR Type: 10–70 A
- High magnetic trip circuit breakers (QOU-HM) are recommended for applications where high initial inrush may occur and for individual dimmer applications.
- For DIN mounting rails, see IEC Starters and Relays, Section 18.

Table 7.20: QOU Low Ampere Miniature Circuit Breakers

Ampere Rating	1P 120/240 Vac		2P 120/240 Vac		2P 240 Vac		3P 240 Vac	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.▲	$ Price	Cat. No.	$ Price
10 k AIR								
10 A	QOU110		QOU210		—		QOU310	
15 A	QOU115		QOU215		QOU215H		QOU315	
20 A	QOU120		QOU220		QOU220H	**168.00**	QOU320	
25 A	QOU125		QOU225		QOU225H		QOU325	
30 A	QOU130	**40.20**	QOU230	**87.00**	QOU230H		QOU330	**285.00**
35 A	QOU135		QOU235		—	—	QOU335	
40 A	QOU140		QOU240		—	—	QOU340	
45 A	QOU145		QOU245		—	—	QOU345	
50 A	QOU150		QOU250		—	—	QOU350	
60 A	QOU160		QOU260		—	—	QOU360	
70 A	QOU170	**78.00**	QOU270	**171.00**	—	—	QOU370	**363.00**
22 k AIR								
15 A	QOU115VH		QOU215VH		—	—	QOU315VH	
20 A	QOU120VH		QOU220VH		—	—	QOU320VH	**426.00**
25 A	QOU125VH		QOU225VH		—	—	QOU325VH	
30 A	QOU130VH		QOU230VH		—	—	QOU330VH	
35 A	QOU135VH	**101.00**	QOU235VH	**189.00**	—	—	—	—
40 A	QOU140VH		QOU240VH		—	—	—	—
45 A	QOU145VH		QOU245VH		—	—	—	—
50 A	QOU150VH		QOU250VH		—	—	—	—
60 A	QOU160VH		QOU260VH		—	—	—	—

▲ QOU-H interrupting rating is 10 kA at 240 Vac.

Table 7.21: QOU-HM Miniature Circuit Breakers (10 k AIR)

Ampere Rating	1P 120/240 Vac		2P 120/240 Vac		2P 240 Vac		3P 240 Vac	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
15 A	QOU115HM	**40.20**	—	—	—	—	—	—
20 A	QOU120HM		—	—	—	—	—	—

High Ampere QOU

Table 7.22: QYU UL1077 Recognized Supplementary Protectors (5 k AIR)

Ampere Rating	1P 277 Vac		2P 120/240 Vac		2P 240 Vac		3P 240 Vac	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
10 A	QYU110		—	—	—	—	—	—
15 A	QYU115		—	—	—	—	—	—
20 A	QYU120	**122.00**	—	—	—	—	—	—
25 A	QYU125		—	—	—	—	—	—
30 A	QYU130		—	—	—	—	—	—

High Ampere QOU Circuit Breakers

General Specifications Common to All High Ampere QOU Circuit Breakers

- Flush mount, surface mount, and DIN rail mount.
- Internal common trip.
- Non-reversible line and load lugs.
- Terminal lug wire size (1) 12– 2/0 AWG Cu or Al.
- UL Listed 60 Vdc per pole (5 k AIR). (**Note:** except switches)
- UL Listed as HACR type, 80–125 A.
- Non-automatic switches have the same physical packaging as miniature circuit breakers, but provide no overcurrent or short circuit protection. They are UL Listed per UL1087 and are CSA certified.

Table 7.23: QOU High Ampere Miniature Circuit Breakers (10 k AIR)

Ampere Rating	1P 120/240 Vac		2P 120/240 Vac		2P 240 Vac		3P 240 Vac	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
80 A	QOU180		QOU280		—	—	QOU380	
90 A	QOU190	**176.00**	QOU290	**246.00**	—	—	QOU390	**416.00**
100 A	QOU1100		QOU2100		—	—	QOU3100	
125 A	—	—	QOU2125	**452.00**	—	—	—	—

Table 7.24: QOU Non-Automatic Switches

Ampere Rating	1P 120 Vac	$ Price	2P 120/240 Vac	$ Price	2P 240 Vac	$ Price	3P 240 Vac	$ Price
	Cat. No.		Cat. No.		Cat. No.		Cat. No.	
60 A	—	—	—	—	QOU200	**87.00**	QOU300	**285.00**
100 A	—	—	—	—	QOU2000	**246.00**	QOU3000	**416.00**
125 A	—	—	—	—	QOU20001	**452.00**	QOU30001	**716.00**

Interrupting Ratings . . . . . Page 7-3
Accessories . . . . . Page 7-12, 7-15
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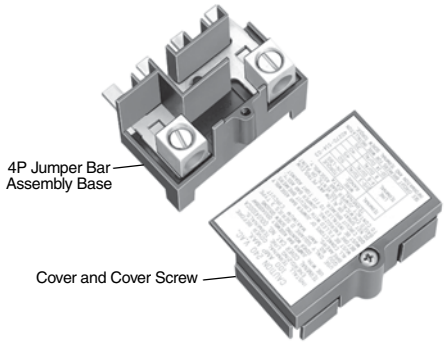
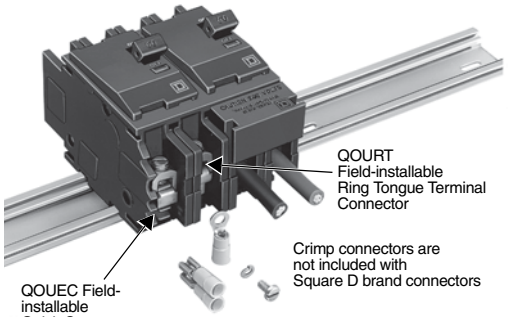
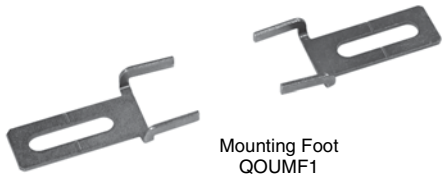


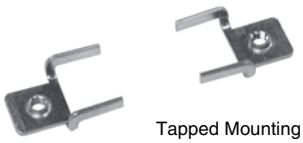
QOU14100JBAF



2P DIN Mounted QOU Circuit Breakers



Mounting Foot
QOUMF1



Tapped Mounting Foot
Suffix–3100

Table 7.25: Accessories for QOU Low Ampere Circuit Breakers (Except as Noted)

Description	Order Qty.	Cat. No.	Unit $ Price
Factory-installed ring tongue terminal, 10–32 screw, for 1P, 2P, 3P QOU, 10–60 A	—	Suffix -5283	**Add 20% to price**
Hex drive 5/32 in. wire binding screw for QOU	—	Suffix -5280	**Add 20% to price**
For padlocking 1P low ampere QOU circuit breaker in OFF or ON position	—	QOU1PA	**10.10**
For padlocking 2P and 3P low ampere QOU circuit breaker in OFF or ON position	—	QOU1PL	**10.10**
For padlocking 1P low ampere QOU circuit breaker in OFF position only	—	QOU1PAFLA♦	**43.50**
For padlocking 2P and 3P low ampere QOU circuit breaker in OFF position only	—	QOU2PAFLA♦	**25.80**
For padlocking 2P and 3P high ampere QOU circuit breaker in OFF position only	—	Suffix -7100	**Add 20% to price**
Handle lock-out, ON or OFF position	—	HLO1♦	**9.90**
4P 100 A Jumper bar assy. w/front wiring with base, cover and screw	1	QOU14100JBAF	**73.00**
4P 100 A Jumper bar assy. w/right side wiring with base, cover and screw	1	QOU14100JBAR	**73.00**
4P 100 A Jumper bar assy. w/left side wiring with base, cover and screw	1	QOU14100JBAL	**73.00**
1Ø, 4P, 100 A Jumper bar base with front wiring	40	QOU14100BAFB	**53.00**
1Ø, 4P, 100 A Jumper bar base with left side wiring	40	QOU14100BALB	**53.00**
1Ø, 4P, 100 A Jumper bar base with right side wiring	40	QOU14100BARB	**53.00**
4P Jumper bar cover	40	QOU14100CAB	**13.20**
Mounting screw for jumper bar cover	40	QOU1CMSB	**0.35**
6P 150 A Jumper bar assy. w/front wiring with base, cover and screw	1	QOU16150JBAF	**99.00**
1Ø, 6P, 150 A Jumper bar base with front wiring	40	QOU16150BAFB	**69.00**
1Ø, 6P, 150 A Jumper bar base with left side wiring	40	QOU16150BALB	**69.00**
1Ø, 6P, 150 A Jumper bar base with right side wiring	40	QOU16150BARB	**69.00**
6P jumper bar cover	40	QOU16150CAB	**17.10**
Vertical rainproof cover 2P and 3P QO, QOU, FA and KA	1 10	BCV▲♦ BCVB▲♦	**30.80** **30.80**
Horizontal rainproof cover 2P QO, QOU, and 3P Q2, EH	1 10	BCH▲♦ BCHB▲♦	**30.80** **30.80**
1P Fingersafe™ cover for high ampere QOU circuit breaker	1 40	QOUHFSC1 QOUHFSC1B	**2.60** **2.10**
1P Fingersafe cover for low ampere QOU circuit breaker	1 40	QOULFSC1 QOULFSC1B	**2.60** **2.10**
Cover plate for one 2P QOU circuit breaker	1 40	QOUCP2 QOUCP2B	**8.30** **6.60**
Cover plate for one 3P QOU circuit breaker	1 40	QOUCP3 QOUCP3B	**15.80** **12.80**
Cover plate for two 2P QOU circuit breakers	1 40	QOUCP4 QOUCP4B	**9.90** **7.90**
Cover plate for three 2P QOU circuit breakers	1 40	QOUCP6 QOUCP6B	**15.60** **12.20**
Field-installable ring tongue terminal adaptor	1 80	QOURT QOURTB	**5.70** **4.40**
Quick connector end connection wiring	1 40	QOUEC QOUECB	**5.70** **4.40**
Quick connector forward or reverse wiring	1 40	QOUFR QOUFRB	**5.70** **4.40**
1P QOU mounting foot	1 80	QOUMF1▲ QOUMF1B▲	**0.71** **0.54**
2P QOU mounting foot	1 40	QOUMF2▲ QOUMF2B▲	**1.40** **1.10**
3P QOU mounting foot	1 24	QOUMF3▲ QOUMF3B▲	**2.30** **1.70**
Tapped mounting foot for QOU, 1P and 2P 10–70 A, 3P 10–60 A			
Packaged with circuit breaker		Suffix -3100	**Add 20% to price**
Individually packaged	1	QOUMFS1	**2.40**
Bulk packed	80	QOUMFS1B	**2.30**
Mechanical interlock attachment: Used to interlock two circuit breakers mounted side-by-side so that only one circuit breaker can be ON at a time. A 1P or 2P circuit breaker can be mounted on the left and interlocked with a 2P or 3P circuit breaker on the right.	1	QOU2DTILA ■	**24.90**

▲ For use on low and high ampere QOU.
■ 10–70 A 1P and 2P, 10–60 A 3P.
♦ DE2E Discount Schedule

For QOUQ Low Ampere Circuit Breakers with Four-Point Quick-Connect Terminals

QOUQ low ampere circuit breakers with four-point quick-connect terminals are provided with permanent factory-installed terminals which are affixed to the Load or OFF end of the circuit breaker. This special terminal will accommodate up to four 1/4-inch insulated female quick connect wire terminations. Total ampacity of these connections must not exceed the rating of the circuit breaker.

Table 7.26: QOUQ Four-Point Quick-Connect Terminals

	Poles	Order Qty.	Cat. No.	Unit $ Price Adder
Four-Point Quick-Connect Terminals	1	1	Change QOU to QOUQ	**8.90**
	2	1		**17.70**
	3	1		**26.40**

Electrical Accessories for QOU . . . . . Page 7-12

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1P C60

2P C60

Multi 9 C60 UL 489 Listed 240 V Miniature Circuit Breakers

- UL 489 Listed and CSA 22.2 No. 5.1 for branch circuit protection
- Eliminates concerns and uncertainty of using a UL 1077 device where a UL 489 device is required
- Replaces fuses in low-ampere range; 17 ratings up to 35 A
- 10 k AIR (1P @ 120 Vac; 2P and 3P @ 240 Vac)
- 60 Vdc for 1P and 125 Vdc for 2P (on C-curve circuit breakers only, see table below)
- Increased installation flexibility with standard box lugs or optional ring terminals
- Allows easy front-mounting and rear wiring when using ring terminals
- A wide range of electrical and mechanical accessories
- Suitable for reverse feeding
- Trip-free mechanism
- Positive indication of contact disconnect

Trip Curve	Use	Magnetic Release
C	For typical loads	7–10 x ampere rating (7–14 for DC)
D	For high inrush	10–14 x ampere rating

3P C60

Box Lug C60

Ring Tongue C60

Box/Ring C60

Table 7.27: UL 489 Circuit Breakers (120/240 V)

Rating (A)	C Curve—7–10 Times Ampere Rating (7–14 DC)						D Curve—10–14 Times Ampere Rating					
	1P▲		2P■		3P		1P		2P		3P	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
Box Lug/Box Lug												
0.5	60100	**125.00**	60134	**269.00**	—	—	60117	**125.00**	60151	**269.00**	—	—
1	60101	**125.00**	60135	**269.00**	60168	**387.00**	60118	**125.00**	60152	**269.00**	60184	**387.00**
1.5	60102	**125.00**	60136	**269.00**	60169	**387.00**	60119	**125.00**	60153	**269.00**	60185	**387.00**
2	60103	**125.00**	60137	**269.00**	60170	**387.00**	60120	**125.00**	60154	**269.00**	60186	**387.00**
3	60104	**125.00**	60138	**269.00**	60171	**387.00**	60121	**125.00**	60155	**269.00**	60187	**387.00**
4	60105	**125.00**	60139	**269.00**	60172	**387.00**	60122	**125.00**	60156	**269.00**	60188	**387.00**
5	60106	**125.00**	60140	**269.00**	60173	**387.00**	60123	**125.00**	60157	**269.00**	60189	**387.00**
6	60107	**114.00**	60141	**246.00**	60174	**356.00**	60124	**114.00**	60158	**246.00**	60190	**356.00**
7	60108	**114.00**	60142	**246.00**	60175	**356.00**	60125	**114.00**	60159	**246.00**	60191	**356.00**
8	60109	**114.00**	60143	**246.00**	60176	**356.00**	60126	**114.00**	60160	**246.00**	60192	**356.00**
10	60110	**114.00**	60144	**246.00**	60177	**356.00**	60127	**114.00**	60161	**246.00**	60193	**356.00**
13	60111	**114.00**	60145	**246.00**	60178	**356.00**	60128	**114.00**	60162	**246.00**	60194	**356.00**
15	60112	**114.00**	60146	**246.00**	60179	**356.00**	60129	**114.00**	60163	**246.00**	60195	**356.00**
20	60113	**114.00**	60147	**246.00**	60180	**356.00**	60130	**114.00**	60164	**246.00**	60196	**356.00**
25	60114	**114.00**	60148	**246.00**	60181	**356.00**	60131	**114.00**	60165	**246.00**	60197	**356.00**
30	60115	**120.00**	60149	**257.00**	60182	**372.00**	60132	**120.00**	60166	**257.00**	60198	**372.00**
35	60116	**120.00**	60150	**257.00**	60183	**372.00**	60133	**120.00**	60167	**257.00**	60199	**372.00**
Ring Tongue/Ring Tongue												
0.5	60200	**131.00**	60234	**282.00**	—	—	60217	**131.00**	60251	**282.00**	—	—
1	60201	**131.00**	60235	**282.00**	60268	**410.00**	60218	**131.00**	60252	**282.00**	60284	**410.00**
1.5	60202	**131.00**	60236	**282.00**	60269	**410.00**	60219	**131.00**	60253	**282.00**	60285	**410.00**
2	60203	**131.00**	60237	**282.00**	60270	**410.00**	60220	**131.00**	60254	**282.00**	60286	**410.00**
3	60204	**131.00**	60238	**282.00**	60271	**410.00**	60221	**131.00**	60255	**282.00**	60287	**410.00**
4	60205	**131.00**	60239	**282.00**	60272	**410.00**	60222	**131.00**	60256	**282.00**	60288	**410.00**
5	60206	**131.00**	60240	**282.00**	60273	**410.00**	60223	**131.00**	60257	**282.00**	60289	**410.00**
6	60207	**122.00**	60241	**261.00**	60274	**378.00**	60224	**122.00**	60258	**261.00**	60290	**378.00**
7	60208	**122.00**	60242	**261.00**	60275	**378.00**	60225	**122.00**	60259	**261.00**	60291	**378.00**
8	60209	**122.00**	60243	**261.00**	60276	**378.00**	60226	**122.00**	60260	**261.00**	60292	**378.00**
10	60210	**122.00**	60244	**261.00**	60277	**378.00**	60227	**122.00**	60261	**261.00**	60293	**378.00**
13	60211	**122.00**	60245	**261.00**	60278	**378.00**	60228	**122.00**	60262	**261.00**	60294	**378.00**
15	60212	**122.00**	60246	**261.00**	60279	**378.00**	60229	**122.00**	60263	**261.00**	60295	**378.00**
20	60213	**122.00**	60247	**261.00**	60280	**378.00**	60230	**122.00**	60264	**261.00**	60296	**378.00**
25	60214	**122.00**	60248	**261.00**	60281	**378.00**	60231	**122.00**	60265	**261.00**	60297	**378.00**
30	60215	**126.00**	60249	**273.00**	60282	**395.00**	60232	**126.00**	60266	**273.00**	60298	**395.00**
35	60216	**126.00**	60250	**273.00**	60283	**395.00**	60233	**126.00**	60267	**273.00**	60299	**395.00**

▲ 1P dual rated 120 Vac/60 Vdc.
■ 2P dual rated 240 Vac/125 Vdc.

Interrupting ratings . . . . . Page 7-3
Accessories . . . . . Page 7-20
Dimensions. . . . . Page 7-54
Mounting Bases . . . . . Page 7-13
DIN Mounting Rail . . . . . Section 18

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Multi 9 C60 UL 489 Listed 480V Miniature Circuit Breakers

- UL 489 Listed, CSA C22.2 No. 5.1; Also IEC 60947-2; CE marked
- 480Y/277 Vac @ 10 kA (2P and 3P), 277 Vac @ 10 kA (1P)
- 0.5 A through 20 A
- 1P, 2P, 3P, 18 mm wide per pole

1P
UL489 C60

Trip Curve	Use	Magnetic Release
C	For typical loads	7–10 x ampere rating (7–14 for DC)
D	For high inrush	10–14 x ampere rating

- UL 486B Listed single-barrel lug: (2) 18–10 AWG (1-25 mm^2) cables, Cu only
- Optional ring tongue terminals
- A wide range of electrical and mechanical accessories
- Suitable for reverse feeding
- Trip-free mechanism
- Positive indication of contact disconnect

2P
UL489 C60

3P
UL489 C60

Table 7.28: UL 489 Circuit Breakers (480Y/277 Vac)

Rating (A)	C Curve—7–10 Times Ampere Rating (7–14 DC)						D Curve—10–14 Times Ampere Rating					
	1P		2P		3P		1P		2P		3P	
	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
Single-Barrel Wire Lug												
0.5	MGN61300	**168.00**	—	—	—	—	MGN61333	**168.00**	—	—	—	—
1	MGN61301	**168.00**	MGN61312	**357.00**	MGN61323	**519.00**	MGN61334	**168.00**	MGN61345	**357.00**	MGN61356	**519.00**
2	MGN61302	**168.00**	MGN61313	**357.00**	MGN61324	**519.00**	MGN61335	**168.00**	MGN61346	**357.00**	MGN61357	**519.00**
3	MGN61303	**168.00**	MGN61314	**357.00**	MGN61325	**519.00**	MGN61336	**168.00**	MGN61347	**357.00**	MGN61358	**519.00**
4	MGN61304	**168.00**	MGN61315	**357.00**	MGN61326	**519.00**	MGN61337	**168.00**	MGN61348	**357.00**	MGN61359	**519.00**
5	MGN61305	**168.00**	MGN61316	**357.00**	MGN61327	**519.00**	MGN61338	**168.00**	MGN61349	**357.00**	MGN61360	**519.00**
6	MGN61306	**168.00**	MGN61317	**357.00**	MGN61328	**519.00**	MGN61339	**168.00**	MGN61350	**357.00**	MGN61361	**519.00**
8	MGN61307	**168.00**	MGN61318	**357.00**	MGN61329	**519.00**	MGN61340	**168.00**	MGN61351	**357.00**	MGN61362	**519.00**
10	MGN61308	**168.00**	MGN61319	**357.00**	MGN61330	**519.00**	MGN61341	**168.00**	MGN61352	**357.00**	MGN61363	**519.00**
15	MGN61309	**168.00**	MGN61320	**357.00**	MGN61331	**519.00**	MGN61342	**168.00**	MGN61353	**357.00**	MGN61364	**519.00**
20	MGN61310	**168.00**	MGN61321	**357.00**	MGN61332	**519.00**	MGN61343	**168.00**	MGN61354	**357.00**	MGN61365	**519.00**
Ring Tongue Terminal												
0.5	MGN61366	**168.00**	—	—	—	—	MGN61399	**168.00**	—	—	—	—
1	MGN61367	**168.00**	MGN61378	**357.00**	MGN61389	**519.00**	MGN61400	**168.00**	MGN61411	**357.00**	MGN61422	**519.00**
2	MGN61368	**168.00**	MGN61379	**357.00**	MGN61390	**519.00**	MGN61401	**168.00**	MGN61412	**357.00**	MGN61423	**519.00**
3	MGN61369	**168.00**	MGN61380	**357.00**	MGN61391	**519.00**	MGN61402	**168.00**	MGN61413	**357.00**	MGN61424	**519.00**
4	MGN61370	**168.00**	MGN61381	**357.00**	MGN61392	**519.00**	MGN61403	**168.00**	MGN61414	**357.00**	MGN61425	**519.00**
5	MGN61371	**168.00**	MGN61382	**357.00**	MGN61393	**519.00**	MGN61404	**168.00**	MGN61415	**357.00**	MGN61426	**519.00**
6	MGN61372	**168.00**	MGN61383	**357.00**	MGN61394	**519.00**	MGN61405	**168.00**	MGN61416	**357.00**	MGN61427	**519.00**
8	MGN61373	**168.00**	MGN61384	**357.00**	MGN61395	**519.00**	MGN61406	**168.00**	MGN61417	**357.00**	MGN61428	**519.00**
10	MGN61374	**168.00**	MGN61385	**357.00**	MGN61396	**519.00**	MGN61407	**168.00**	MGN61418	**357.00**	MGN61429	**519.00**
15	MGN61375	**168.00**	MGN61386	**357.00**	MGN61397	**519.00**	MGN61408	**168.00**	MGN61419	**357.00**	MGN61430	**519.00**
20	MGN61376	**168.00**	MGN61387	**357.00**	MGN61398	**519.00**	MGN61409	**168.00**	MGN61420	**357.00**	MGN61431	**519.00**

Multi 9 C60 UL 489A Listed Miniature Circuit Breakers for DC Telecommunication Applications

A limited range of C60 products are UL Listed as UL 489A circuit breakers for protection of DC telecommunications circuits.

Table 7.29: UL 489A Circuit Breakers for DC Telecommunications Applications (1P, 2 Modules, C curve)

Rating (A)	Cat. No.	$ Price	Rating (A)	Cat. No.	$ Price
0.5	60406	**120.00**	10	60414	**101.00**
1	60407	**101.00**	13	60415	**101.00**
2	60408	**101.00**	15	60416	**101.00**
3	60409	**101.00**	20	60417	**101.00**
4	60410	**101.00**	30	60418	**101.00**
5	60411	**101.00**	40	60419	**111.00**
6	60412	**101.00**	50	60420	**117.00**
8	60413	**101.00**	60	60421	**123.00**

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1P C60H-DC

2P C60H-DC

Multi 9 C60H-DC UL 1077 Recognized Supplementary Protectors (250 and 500 Vdc)

The C60H-DC supplementary protectors are used in direct current circuits (industrial control and automation, transport, renewable energy, etc.). They provide overcurrent protection within appliances or electrical equipment.

- Range from 0.5–40 A
- 5 k AIR at 250 Vdc (1-pole) and 5 k AIR at 500 Vdc (2-pole, wired in series)
- Trip-free mechanism
- Positive indication of contact disconnect
- C-Curve: 7 to14 times ampere rating
- UL 1077, IEC 60947-2, EN 60947-2, GB 14048.2, CCC and CE mark

Table 7.30: Multi 9 C60H-DC UL 1077 Recognized Supplementary Protectors

	1-Pole 24–250 Vdc		2-Pole 24–500 Vdc	
Current (A)▲	Cat. No.	$ Price	Cat. No.	$ Price
0.5	MGN61500	**182.00**	MGN61520	**392.00**
1	MGN61501	**182.00**	MGN61521	**392.00**
2	MGN61502	**182.00**	MGN61522	**392.00**
3	MGN61503	**182.00**	MGN61523	**392.00**
4	MGN61504	**182.00**	MGN61524	**392.00**
5	MGN61505	**182.00**	MGN61525	**392.00**
6	MGN61506	**182.00**	MGN61526	**392.00**
10	MGN61508	**182.00**	MGN61528	**392.00**
13	MGN61509	**182.00**	MGN61529	**392.00**
15	MGN61510	**182.00**	MGN61530	**392.00**
16	MGN61511	**182.00**	MGN61531	**392.00**
20	MGN61512	**182.00**	MGN61532	**392.00**
25	MGN61513	**182.00**	MGN61533	**392.00**
30	MGN61514	**182.00**	MGN61534	**392.00**
32	MGN61515	**182.00**	MGN61535	**392.00**
40	MGN61517	**200.00**	MGN61537	**412.00**

▲ At 25°C/77°F, for other temperatures see temperature derating table in Multi 9 Catalog 0860CT0201R1/08

2P GFP

4P GFP (3- or 4-wire)

Multi 9 UL1053 Listed GFP Ground Fault Protectors

- Provides ground fault protection for electrical circuits.
- Available in 2P (2-wire) and 4P (3- or 4-wire) versions
- Provides no thermal or magnetic protection. The circuit must be protected by an upstream device.
- Contains Si Technology to increase immunity to noise and to minimize the potential for nuisance tripping in noisy electrical environments.
- Tripped condition due to a ground fault is displayed on the front face by a red mechanical indicator.
- DIN rail mounting for easy installation.

Table 7.31: Multi 9 UL 1053 Listed GFP Ground Fault Protectors

				2P				4P	
				UL1053 120/240 Vac, 240 Vac, 60 Hz IEC 61008 230 Vac, 240 Vac, 50 Hz		UL1053 277 Vac, 480Y/277 Vac, 60 Hz IEC 61008 230/400 Vac, 240/415 Vac, 50 Hz		UL1053 240 Vac, 480Y/277 Vac, 60 Hz IEC 61008 230/400 Vac, 240/415 Vac, 50 Hz	
Current (A)	Maximum Sensitivity (mA)	Tripping Range	Family	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
25	30	22.1 to 29.9 mA	GFP 30	60949	**633.00**	60969	**696.00**	60989	**720.00**
	100	73.1 to 98.9 mA	GFP 100	60950	**570.00**	60970	**627.00**	60990	**648.00**
	300	221 to 299 mA	GFP 300	60951	**444.00**	60971	**488.00**	60991	**504.00**
40	30	22.1 to 29.9 mA	GFP 30	60952	**666.00**	60972	**734.00**	60992	**758.00**
	100	73.1 to 98.9 mA	GFP 100	60953	**600.00**	60973	**660.00**	60993	**683.00**
	300	221 to 299 mA	GFP 300	60954	**467.00**	60974	**513.00**	60994	**531.00**
63	30	22.1 to 29.9 mA	GFP 30	60955	**1001.00**	60975	**1100.00**	60995	**1136.00**
	100	73.1 to 98.9 mA	GFP 100	60956	**900.00**	60976	**990.00**	60996	**1023.00**
	300	221 to 299 mA	GFP 300	60957	**701.00**	60977	**770.00**	60997	**795.00**
80	300	221 to 299 mA	GFP 300	60958	**933.00**	60978	**1026.00**	60998	**1272.00**
100	300	221 to 299 mA	GFP 300	60959	**1097.00**	60979	**1206.00**	60999	**1496.00**

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Multi 9™ Miniature Circuit Breakers

Intended for use within equipment where branch circuit protection is already provided or not needed

- Range from 0.5 to 63 A
- 10 k AIR @ 120/240 Vac; 5 k AIR at 480Y/277; 10 k AIR @ 60 Vdc (1P) and 125 Vdc (2P)
- Suitable for reverse feeding
- DIN mounting for easy installation
- Suitable for reverse feeding
- A wide range of electrical and mechanical accessories
- Trip-free mechanism
- Positive indication of contact disconnect

Trip Curve	Use	Magnetic Release
B	For sensitive equipment	3.2–4.8 x ampere rating
C	For typical loads	7–10 x ampere rating (7–14 for DC)
D	For high inrush	10–14 x ampere rating

1P
UL 1077 C60

2P
UL 1077 C60

3P
UL 1077 C60

4P
UL 1077 C60

Table 7.32: UL 1077 Supplementary Protectors

Rating (A)	1P	$ Price	2P	$ Price	3P	$ Price	4P	$ Price
B Curve—Magnetic Setting Between 3.2 and 4.8 Times Ampere Rating								
1	MG24110	**101.00**	MG24125	**218.00**	MG24140	**315.00**	MG24155	**416.00**
1.2	MG17402	**101.00**	MG17432	**218.00**	—	—	—	—
1.5	MG17403	**101.00**	MG17433	**218.00**	—	—	—	—
2	MG24111	**101.00**	MG24126	**218.00**	MG24141	**315.00**	MG24156	**416.00**
3	MG24112	**101.00**	MG24127	**218.00**	MG24142	**315.00**	MG24157	**416.00**
4	MG24113	**101.00**	MG24128	**218.00**	MG24143	**315.00**	MG24158	**416.00**
5	MG17404	**101.00**	MG17434	**218.00**	—	—	—	—
6	MG24114	**101.00**	MG24129	**218.00**	MG24144	**315.00**	MG24159	**416.00**
7	MG17405	**101.00**	MG17435	**218.00**	—	—	—	—
8	MG24115	**101.00**	MG24130	**218.00**	MG24145	**315.00**	MG24160	**416.00**
10	MG24116	**101.00**	MG24131	**218.00**	MG24146	**315.00**	MG24161	**416.00**
13	MG24117	**101.00**	MG24132	**218.00**	MG24147	**315.00**	MG24162	**416.00**
15	MG17406	**101.00**	MG17436	**218.00**	MG17461	**315.00**	—	—
16	MG24118	**101.00**	MG24133	**218.00**	MG24148	**315.00**	MG24163	**416.00**
20	MG24119	**101.00**	MG24134	**218.00**	MG24149	**315.00**	MG24164	**416.00**
25	MG24120	**101.00**	MG24135	**218.00**	MG24150	**315.00**	MG24165	**416.00**
30	MG17407	**101.00**	MG17437	**218.00**	MG17462	**315.00**	—	—
32	MG24121	**101.00**	MG24136	**218.00**	MG24151	**315.00**	MG24166	**416.00**
35	MG17408	**101.00**	MG17438	**218.00**	MG17463	**315.00**	—	—
40	MG24122	**111.00**	MG24137	**224.00**	MG24152	**324.00**	MG24167	**420.00**
50	MG24123	**117.00**	MG24138	**240.00**	MG24153	**338.00**	MG24168	**438.00**
60	MG17409	**123.00**	MG17439	**252.00**	MG17464	**353.00**	—	—
63	MG24124	**123.00**	MG24139	**252.00**	MG24154	**353.00**	MG24169	**450.00**
C Curve—Magnetic Setting Between 7 and 10 Times Ampere Rating								
0.5	MG17411	**120.00**	—	—	—	—	—	—
1	MG24425	**101.00**	MG24442	**218.00**	MG24459	**315.00**	MG24476	**416.00**
1.2	MG17412	**101.00**	MG17442	**218.00**	—	—	—	—
1.5	MG17413	**101.00**	MG17443	**218.00**	—	—	—	—
2	MG24426	**101.00**	MG24443	**218.00**	MG24460	**315.00**	MG24477	**416.00**
3	MG24427	**101.00**	MG24444	**218.00**	MG24461	**315.00**	MG24478	**416.00**
4	MG24428	**101.00**	MG24445	**218.00**	MG24462	**315.00**	MG24479	**416.00**
5	MG17414	**101.00**	MG17444	**218.00**	—	—	—	—
6	MG24430	**101.00**	MG24447	**218.00**	MG24464	**315.00**	MG24481	**416.00**
7	MG17415	**101.00**	MG17445	**218.00**	—	—	—	—
8	MG24431	**101.00**	MG24448	**218.00**	MG24465	**315.00**	MG24482	**416.00**
10	MG24432	**101.00**	MG24449	**218.00**	MG24466	**315.00**	MG24483	**416.00**
13	MG24433	**101.00**	MG24450	**218.00**	MG24467	**315.00**	MG24484	**416.00**
15	MG17416	**101.00**	MG17446	**218.00**	MG17466	**315.00**	—	—
16	MG24434	**101.00**	MG24451	**218.00**	MG24468	**315.00**	MG24485	**416.00**
20	MG24435	**101.00**	MG24452	**218.00**	MG24469	**315.00**	MG24486	**416.00**
25	MG24436	**101.00**	MG24453	**218.00**	MG24470	**315.00**	MG24487	**416.00**
30	MG17417	**101.00**	MG17447	**218.00**	MG17467	**315.00**	—	—
32	MG24437	**101.00**	MG24454	**218.00**	MG24471	**315.00**	MG24488	**416.00**
35	MG17418	**101.00**	MG17448	**218.00**	MG17468	**315.00**	—	—
40	MG24438	**111.00**	MG24455	**224.00**	MG24472	**324.00**	MG24489	**420.00**
50	MG24439	**117.00**	MG24456	**240.00**	MG24473	**338.00**	MG24490	**438.00**
60	MG17419	**123.00**	MG17449	**252.00**	MG17469	**353.00**	—	—
63	MG24440	**123.00**	MG24457	**252.00**	MG24474	**353.00**	MG24491	**450.00**
D Curve—Magnetic Setting Between 10 and 14 Times Ampere Rating								
0.5	MG17421	**120.00**	—	—	—	—	—	—
1	MG24500	**101.00**	MG24516	**218.00**	MG24532	**315.00**	MG24548	**416.00**
1.2	MG17422	**101.00**	MG17452	**218.00**	—	—	—	—
1.5	MG17423	**101.00**	MG17453	**218.00**	—	—	—	—
2	MG24501	**101.00**	MG24517	**218.00**	MG24533	**315.00**	MG24549	**416.00**
3	MG24502	**101.00**	MG24518	**218.00**	MG24534	**315.00**	MG24550	**416.00**
4	MG24503	**101.00**	MG24519	**218.00**	MG24535	**315.00**	MG24551	**416.00**
5	MG17424	**101.00**	MG17454	**218.00**	—	—	—	—
6	MG24504	**101.00**	MG24520	**218.00**	MG24536	**315.00**	MG24552	**416.00**
7	MG17425	**101.00**	MG17455	**218.00**	—	—	—	—
8	MG24505	**101.00**	MG24521	**218.00**	MG24537	**315.00**	MG24553	**416.00**
10	MG24506	**101.00**	MG24522	**218.00**	MG24538	**315.00**	MG24554	**416.00**
13	MG24507	**101.00**	MG24523	**218.00**	MG24539	**315.00**	MG24555	**416.00**
15	MG17426	**101.00**	MG17456	**218.00**	MG17471	**315.00**	—	—
16	MG24508	**101.00**	MG24524	**218.00**	MG24540	**315.00**	MG24556	**416.00**
20	MG24509	**101.00**	MG24525	**218.00**	MG24541	**315.00**	MG24557	**416.00**
25	MG24510	**101.00**	MG24526	**218.00**	MG24542	**315.00**	MG24558	**416.00**
30	MG17427	**101.00**	MG17457	**218.00**	MG17472	**315.00**	—	—
32	MG24511	**101.00**	MG24527	**218.00**	MG24543	**315.00**	MG24559	**416.00**
35	MG17428	**101.00**	MG17458	**218.00**	MG17473	**315.00**	—	—
40	MG24512	**111.00**	MG24528	**224.00**	MG24544	**324.00**	MG24560	**420.00**
50	MG24513	**117.00**	MG24529	**240.00**	MG24545	**338.00**	MG24561	**438.00**
60	MG17429	**123.00**	MG17459	**252.00**	MG17474	**353.00**	—	—
63	MG24514	**123.00**	MG24530	**252.00**	MG24546	**353.00**	MG24562	**450.00**

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Electrical Accessories for C60 Circuit Breakers and Supplementary Protectors

Ring Tongue Terminal Kit

Spacer

Terminal Screw Shield

C60 Padlock Attachment

Heavy-duty Padlock Attachment

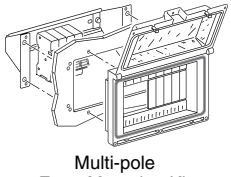
Rotary Handle

Label Holders for 2, 3 or 4P C60

Front Mounting Kit for C60
1P, 2P, 3P, 4P
(1 per circuit breaker)

MGN26380 Locking Device Left Side Mount

MGN26381 Locking Device Right Side Mount



Multi-pole Front Mounting Kit

Comb Bus Bar

Possible Combinations

Mounted to the left of the circuit breaker with a maximum width of 54 mm.

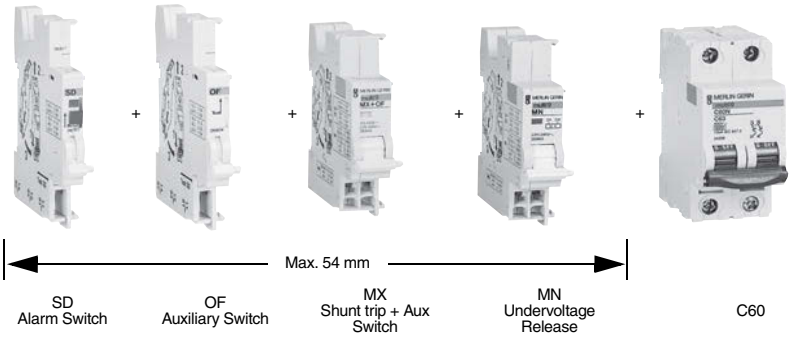


Table 7.33: Multi 9 C60 Electrical Accessories

Descriptions	Control Voltage		Width in 9 mm modules	C60 UL/IEC	
	Vac	Vdc		Cat. No.	$ Price
OF Auxiliary Switch (1a1b)	12–277	12–125	1	MG26925	**60.00**
SD Alarm Switch (1a1b)	12–277	12–125	1	MG26928	**60.00**
MX Shunt Trip + OF Auxiliary Switch (1a1b)	24	24	2	27118	**140.00**
	48	48	2	27110	
	110–240–277	125	2	27109	
MN Undervoltage Release	24	24	2	27108	**201.00**
	48	48	2	27106	
	120	—	2	27107	
	240	—	2	27105	
Multi-9 GFP UL 1053 Listed Ground Fault Protectors	120 to 480Y/277 Vac; 30, 100, and 300 mA; 2P and 4Ps. See page 7-18 Handout, **0860HO0602** or Catalog **0860CT0201**				

Table 7.34: Multi 9 C60 Mechanical Accessories

Descriptions		C60	
		Cat. No.	$ Price
Ring tongue terminal kit for UL1077 C60	For one pole	17400	**15.80**
Spacer for DIN rail, Not UL Recognized	9 mm wide	MG27062	**9.30**
Padlock Attachment (1 per for 1P, 2P, 3P or 4P)	2 per pack	MG26970	**33.20**
Heavy-duty Padlock Attachment for C60, Locks OFF only	2 per pack	M9PAF	**60.00**
Padlocking Device Left Side Mount, Locks OFF only▲	1 per pack	MGN26380	**37.50**
Padlocking Device Right Side Mount, Locks OFF only■		MGN26381	**37.50**
Front Mounting Kit	1P	MG26983	**16.80**
	2P	MG26984	**16.80**
	3P	MG26985	**16.80**
	4P	MG26989	**16.80**
Label holders for 2, 3 or 4P C60 (Not UL Recognized)	Bag of 10	MG27150	**51.00**
Terminal Screw Shield (Not UL Recognized)	Bag of two 4P shields	MG26981	**51.00**
Terminal cover (Not UL Recognized)	1P	MG26975	**26.10**
	2P	MG26976	**51.00**
	3P	MG26975+MG26976	
	4P	MG26978	**102.00**
Comb Bus Bar Kit for UL1077 C60, 12 poles, Fixed Length	1Ø	MG10285	**63.00**
	2Ø	MG10286	**69.00**
	3 Ø	MG10287	**80.00**
Tooth Caps for UL Comb Bus Bar, Bag of 20		60488	**37.80**
Rotary Handle for C60 (Non UL Recognized)			
Operating Subassembly	2P/3P/4P	MG27046	**129.00**
Door Interlock Handle		MG27047	**107.00**
Fixed Handle (Front or Lateral)		MG27048	**117.00**
Multi-pole Front Mounting Kit			
Rail Support (20 of 9 mm modules)		14211	**54.00**
Hinged Transparent Cover		14210	**158.00**

▲ Left-side mounted padlocking device cannot be used in conjunction with accessories SD, OF, MX or MN. Use right-side mounted padlocking device when accessories are required.

■ Right-side mounted padlocking device cannot be used in conjunction with VIGI module. Use left-side mounted padlocking device when VIGI Module is required..

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The PowerPact Advantage

- **Proven Performance:** Industry-leading circuit breaker innovation and protection for heavy-duty commercial and industrial applications.
- **Smart**: Integrated metering options provide a cost-effective solution to reduce energy consumption, optimize energy costs, and improve energy availablility for your facilities.
- **Flexible:** Full range of thermal-magnetic and electronic trip molded case circuit breakers from 15 A to 3000 A, delivering the ratings, configurations, and operators for your unique applications.
- **Simple:** Common catalog numbers, standardized ratings, and a full range of field-installable accessories make product selection, installation and maintenance easier than ever.
- **Common Design Features:** Mounting holes, door trim, and handle accessories

H-Frame 150 A	J-Frame 250 A	Q-Frame 250 A	L-Frame 600 A	M-Frame 800 A	P-Frame 1200 A	R-Frame 3000 A
New! Electronic Trip Version	New! Electronic Trip Version		New!			

Table 7.35: PowerPact Interrupting Ratings

Voltage	Interrupting Rating						
	B	D	G	J	K	L	R
240 Vac	10 kA	25 kA	65 kA	100 kA	65 kA	125 kA	200 kA
480 Vac		18 kA	35 kA	65 kA	65 kA ▲	100 kA	200 kA
600 Vac		14 kA	18 kA	25 kA	65 kA ▲	50 kA■	100 kA

▲ P-frame K interrupting is 50 kA at 480 and 600 Vac.
■ P-frame L interrupting is 25 kA at 600 Vac.

Table 7.36: Common Catalog Numbering System

Frame	Rating	Termination	Poles	Voltage	Amperage ♦			Suffix Code		Suffix Code	
H	G	L	3	6	1	5	0	A	B	S	A

110 Vac Shunt Trip
2A/2B Auxiliary Switch

Frame Designation
H 150 A Frame
J 250 A Frame
Q 250 A Frame
L 600 A Frame
M 800 A Frame
P 1200 A Frame
R 3000 A Frame

Interrupting Rating			
	240 Vac	480 Vac	600Vac
B	10 kA		
D	25 kA	18 kA	14 kA
G	65 kA	35 kA	18 kA
J	100 kA	65 kA	25 kA
K	65 kA	65 kA	65 kA
L	125 kA	100 kA	50 kA
R	200 kA	200 kA	100 kA

Terminations
A I-Line
L Lugs on Both Ends
F Bus Bar (No Lugs)
M Lugs Line Side Only
P Lugs Load End Only
N Plug-in
D Drawout
S Rear Connected Studs

♦ For amperage of M-, P- or R-frame circuit breakers, add a zero to the three amperage digits; for example, 120 = 1200 A.

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HD and HG 2P
Thermal-Magnetic Trip Unit
(2P HJ, HL in 3P module)

H-Frame
Thermal-Magnetic Trip Unit

New!

Table 7.37: H-Frame 150 A Thermal-Magnetic UL Current-Limiting★ Circuit Breakers(600 Vac, 250 Vdc) With Factory Sealed Trip Unit Suitable for Reverse Connection▲

Current Rating @ 40°C	Fixed AC Magnetic Trip		Cat. No.■♦	Interrupting Rating (2nd Letter of Catalog Number)								Terminal Wire Range
				D		G		J★		L★		
				$ Price								
	Hold	Trip		80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	
H-Frame, 150A 2P, 600 Vac 50/60 Hz, 250 Vdc												
15 A	350 A	750 A	H( )L26015(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	AL150HD 14–3/0 AWG Al or Cu
20 A	350 A	750 A	H( )L26020(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
25 A	350 A	750 A	H( )L26025(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
30 A	350 A	750 A	H( )L26030(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
35 A	400 A	850 A	H( )L26035(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
40 A	400 A	850 A	H( )L26040(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
45 A	400 A	850 A	H( )L26045(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
50 A	400 A	850 A	H( )L26050(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
60 A	800 A	1450 A	H( )L26060(C)	**870.00**	**1044.00**	**1269.00**	**1523.00**	**1559.00**	**1871.00**	**2364.00**	**2837.00**	
70 A	800 A	1450 A	H( )L26070(C)	**1062.00**	**1274.00**	**1497.00**	**1797.00**	**1721.00**	**2066.00**	**2613.00**	**3137.00**	
80 A	800 A	1450 A	H( )L26080(C)	**1062.00**	**1274.00**	**1497.00**	**1797.00**	**1721.00**	**2066.00**	**2613.00**	**3137.00**	
90 A	800 A	1450 A	H( )L26090(C)	**1062.00**	**1274.00**	**1497.00**	**1797.00**	**1721.00**	**2066.00**	**2613.00**	**3137.00**	
100 A	800 A	1700 A	H( )L26100(C)	**1062.00**	**1274.00**	**1497.00**	**1797.00**	**1721.00**	**2066.00**	**2613.00**	**3137.00**	
110 A	900 A	1700 A	H( )L26110(C)	**2072.00**	**2486.00**	**3059.00**	**3671.00**	**4449.00**	**5339.00**	**5534.00**	**6641.00**	
125 A	900 A	1700 A	H( )L26125(C)	**2072.00**	**2486.00**	**3059.00**	**3671.00**	**4449.00**	**5339.00**	**5534.00**	**6641.00**	
150 A	900 A	1700 A	H( )L26150(C)	**2072.00**	**2486.00**	**3059.00**	**3671.00**	**4449.00**	**5339.00**	**5534.00**	**6641.00**	
H-Frame 150A 3P, 600 Vac 50/60 Hz, 250 Vdc												
15 A	350 A	750 A	H( )L36015(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	AL150HD 14–3/0 AWG Al or Cu
20 A	350 A	750 A	H( )L36020(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
25 A	350 A	750 A	H( )L36025(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
30 A	350 A	750 A	H( )L36030(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
35 A	400 A	850 A	H( )L36035(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
40 A	400 A	850 A	H( )L36040(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
45 A	400 A	850 A	H( )L36045(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
50 A	400 A	850 A	H( )L36050(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
60 A	800 A	1450 A	H( )L36060(C)	**1088.00**	**1305.00**	**1493.00**	**1791.00**	**1949.00**	**2339.00**	**2849.00**	**3419.00**	
70 A	800 A	1450 A	H( )L36070(C)	**1328.00**	**1592.00**	**1701.00**	**2042.00**	**2099.00**	**2519.00**	**3149.00**	**3779.00**	
80 A	800 A	1450 A	H( )L36080(C)	**1328.00**	**1592.00**	**1701.00**	**2042.00**	**2099.00**	**2519.00**	**3149.00**	**3779.00**	
90 A	800 A	1450 A	H( )L36090(C)	**1328.00**	**1592.00**	**1701.00**	**2042.00**	**2099.00**	**2519.00**	**3149.00**	**3779.00**	
100 A	800 A	1700 A	H( )L36100(C)	**1328.00**	**1592.00**	**1701.00**	**2042.00**	**2099.00**	**2519.00**	**3149.00**	**3779.00**	
110 A	900 A	1700 A	H( )L36110(C)	**2600.00**	**3120.00**	**3599.00**	**4319.00**	**5174.00**	**6209.00**	**6749.00**	**8099.00**	
125 A	900 A	1700 A	H( )L36125(C)	**2600.00**	**3120.00**	**3599.00**	**4319.00**	**5174.00**	**6209.00**	**6749.00**	**8099.00**	
150 A	900 A	1700 A	H( )L36150(C)	**2600.00**	**3120.00**	**3599.00**	**4319.00**	**5174.00**	**6209.00**	**6749.00**	**8099.00**	

New!

Table 7.38: J-Frame 250 A Thermal-Magnetic UL Current-Limiting★ Circuit Breakers (600 Vac, 250 Vdc) With Factory Sealed Trip Unit Suitable for Reverse Connection▲

Current Rating @ 40°C	Adjustable AC Magnetic Trip		Cat. No.■♦	Interrupting Rating (2nd Letter of Catalog Number)										Terminal Wire Range
				D		G		J★		L★		R★		
				$ Price										
	Low	High		80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	
J-Frame 250A 2P, 600 Vac 50/60 Hz, 250 Vdc														
150 A	750 A	1500 A	J( )L26150(C)	**2175.00**	**2610.00**	**3212.00**	**3854.00**	**4671.00**	**5606.00**	**5811.00**	**6972.00**	—	—	AL175JD 4–4/0 AWG Al or Cu
175 A	875 A	1750 A	J( )L26175(C)	**2175.00**	**2610.00**	**3212.00**	**3854.00**	**4671.00**	**5606.00**	**5811.00**	**6972.00**	—	—	
200 A	1000 A	2000 A	J( )L26200(C)	**2175.00**	**2610.00**	**3212.00**	**3854.00**	**4671.00**	**5606.00**	**5811.00**	**6972.00**	—	—	AL250JD 3/0 AWG–350 kcmil Al or Cu
225 A	1125 A	2250 A	J( )L26225(C)	**2175.00**	**2610.00**	**3212.00**	**3854.00**	**4671.00**	**5606.00**	**5811.00**	**6972.00**	—	—	
250 A	1250 A	2500 A	J( )L26250(C)	**2988.00**	**3585.00**	**4251.00**	**5102.00**	**6225.00**	**7469.00**	**7194.00**	**8633.00**	—	—	
J-Frame 250A 3P, 600 Vac 50/60 Hz, 250 Vdc														
150 A	750 A	1500 A	J( )L36150(C)	**2730.00**	**3276.00**	**3779.00**	**4535.00**	**5432.00**	**6519.00**	**7086.00**	**8504.00**	**9212.00**	**11055.00**	AL175JD 4–4/0 AWG Al or Cu
175 A	875 A	1750 A	J( )L36175(C)	**2730.00**	**3276.00**	**3779.00**	**4535.00**	**5432.00**	**6519.00**	**7086.00**	**8504.00**	**9212.00**	**11055.00**	
200 A	1000 A	2000 A	J( )L36200(C)	**2730.00**	**3276.00**	**3779.00**	**4535.00**	**5432.00**	**6519.00**	**7086.00**	**8504.00**	**9212.00**	**11055.00**	AL250JD 3/0 AWG–350 kcmil Al or Cu
225 A	1125 A	2250 A	J( )L36225(C)	**2730.00**	**3276.00**	**3779.00**	**4535.00**	**5432.00**	**6519.00**	**7086.00**	**8504.00**	**9212.00**	**11055.00**	
250 A	1250 A	2500 A	J( )L36250(C)	**3749.00**	**4499.00**	**5001.00**	**6002.00**	**7238.00**	**8685.00**	**8993.00**	**10791.00**	**11169.00**	**13402.00**	

▲ See Supplemental Digest pages 3-2 and 3-3 for circuit breakers with field interchangeable trip units.
■ To complete catalog number, replace the blank with the appropriate rating (D, G, J, L).
♦ For 100% rated circuit breakers add a "C" in the 9th character place (for example, HDL26015**C** or JDL26150**C**).
100% rated H- and J-frame circuit breakers have copper lugs and can only be used with copper wire.
★ Circuit breakers with J, L, and R interrupting ratings are UL certified as current limiting..

Table 7.39: H- and J-Frame Termination Options

Termination Letter
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.

H G L 3 6 1 0 0
└ Termination Letter

Plug-in

Drawout

Rear Connected

▼ For N and D pricing, add termination pricing on page 7-45 to price. For S pricing, add termination pricing on page 7-41 to price.

Table 7.40: H- and J-Frame Interrupting Ratings

Voltage	Interrupting Rating				
	D	G	J	L	R
240 Vac	25 kA	65 kA	100 kA	125 kA	200 kA
480 Vac	18 kA	35 kA	65 kA	100 kA	200 kA
600 Vac	14 kA	18 kA	25 kA	50 kA	100 kA

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New! Electronic Trip Version

Table 7.41: H-Frame 150 A and J-Frame 250 A Electronic Trip UL Current-Limiting▲ Circuit Breakers (600 Vac) With Factory Sealed Trip Unit■ Suitable for Reverse Connection □

Electronic Trip Unit			Sensor Rating	Cat. No.♦	Interrupting Rating (2nd Letter of Catalog Number)										Terminal
					D		G		J▲		L▲		R▲		
					$ Price										
Type	Function	Trip Unit			80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	
600 Vac, 50/60 Hz, 3P															
Micrologic Standard	LI	3.2△	60 A 100 A 150 A	H( )L36060(C)U31X H( )L36100(C)U31X H( )L36150(C)U31X	1247.00 1487.00 2759.00	1455.00 1735.00 3220.00	1652.00 1860.00 3758.00	1928.00 2171.00 4386.00	2108.00 2258.00 5333.00	2460.00 2635.00 6224.00	3008.00 3308.00 6908.00	3510.00 3860.00 8062.00	3971.00 4367.00 9119.00	4633.00 5095.00 10642.00	AL150HD★
			250 A	J( )L36250(C)U31X	2957.00	3451.00	4006.00	4675.00	5659.00	6604.00	7313.00	8534.00	9653.00	11265.00	AL250JD▼
Micrologic Standard	LSI	3.2S△	60 A 100 A 150 A	H( )L36060(C)U33X H( )L36100(C)U33X H( )L36150(C)U33X	1433.00 1673.00 2945.00	1641.00 1921.00 3405.00	1838.00 2046.00 3944.00	2113.00 2356.00 4571.00	2294.00 2444.00 5519.00	2646.00 2821.00 6409.00	3194.00 3494.00 7094.00	3696.00 4046.00 8247.00	4216.00 4612.00 9364.00	4879.00 5341.00 10886.00	AL150HD★
			250 A	J( )L36250(C)U33X	3221.00	3715.00	4270.00	4939.00	5923.00	6868.00	7577.00	8798.00	10002.00	11613.00	AL250JD▼
Micrologic Ammeter	LSI	5.2A	60 A 100 A 150 A	H( )L36060(C)U43X H( )L36100(C)U43X H( )L36150(C)U43X	2031.00 2271.00 3543.00	2240.00 2520.00 4004.00	2436.00 2644.00 4542.00	2712.00 2955.00 5170.00	2892.00 3042.00 6117.00	3244.00 3419.00 7008.00	3792.00 4092.00 7692.00	4295.00 4645.00 8846.00	5005.00 5401.00 10153.00	5669.00 6131.00 11677.00	AL150HD★
			250 A	J( )L36250(C)U43X	4075.00	4569.00	5124.00	5793.00	6777.00	7722.00	8431.00	9653.00	11129.00	12742.00	AL250JD▼
Micrologic Energy	LSI	5.2E	60 A 100 A 150 A	H( )L36060(C)U53X H( )L36100(C)U53X H( )L36150(C)U53X	2391.00 2631.00 3903.00	2599.00 2879.00 4363.00	2796.00 3004.00 4902.00	3072.00 3314.00 5529.00	3252.00 3402.00 6477.00	3604.00 3779.00 7367.00	4152.00 4452.00 8052.00	4654.00 5004.00 9205.00	5481.00 5877.00 10629.00	6143.00 6605.00 12151.00	AL150HD★
			250 A	J( )L36250(C)U53X	4588.00	5082.00	5637.00	6306.00	7290.00	8235.00	8944.00	10165.00	11806.00	13418.00	AL250JD▼
Micrologic Ammeter	LSIG	6.2A	60 A 100 A 150 A	H( )L36060(C)U44X H( )L36100(C)U44X H( )L36150(C)U44X	2751.00 2991.00 4263.00	2960.00 3240.00 4724.00	3156.00 3364.00 5262.00	3432.00 3675.00 5890.00	3612.00 3762.00 6837.00	3964.00 4139.00 7728.00	4512.00 4812.00 8412.00	5015.00 5365.00 9566.00	5956.00 6352.00 11104.00	6620.00 7082.00 12627.00	AL150HD★
			250 A	J( )L36250(C)U44X	5100.00	5594.00	6149.00	6818.00	7802.00	8747.00	9456.00	10678.00	12482.00	14095.00	AL250JD▼
Micrologic Energy	LSIG	6.2E	60 A 100 A 150 A	H( )L36060(C)U54X H( )L36100(C)U54X H( )L36150(C)U54X	3111.00 3351.00 4623.00	3319.00 3599.00 5083.00	3516.00 3724.00 5622.00	3792.00 4034.00 6249.00	3972.00 4122.00 7197.00	4324.00 4499.00 8087.00	4872.00 5172.00 8772.00	5374.00 5724.00 9925.00	6431.00 6827.00 11579.00	7094.00 7556.00 13101.00	AL150HD★
			250 A	J( )L36250(C)U54X	5613.00	6107.00	6662.00	7331.00	8315.00	9260.00	9969.00	11190.00	13159.00	14771.00	AL250JD▼

▲ Circuit breakers with J, L, and R interrupting ratings are UL certified as current limiting.
■ See Supplemental Digest page 3-2 for circuit breakers with field-interchangeable trip units
♦ For 100% rated circuit breakers, add a "C" in the 9th character place (for example, HGL36150CU31X, JGL36250CU43X)
100% rated H- and J-frame circuit breakers have copper lugs and can only be used with copper wire.
★ AL150HD wire range is 14–3/0 AWG Al or Cu.
▼ AL250JD wire range is 3/0 AWG–350 kcmil Al or Cu. For smaller wire range (4–4/0 AWG Al or Cu), replace the lug's wire binding screws with the larger binding screws provided.
△ 3P circuit breakers with this trip unit can be used for 2P applications.
□ For applications requiring communications see page 7-49.

H-Frame
Micrologic™ Trip Unit

Table 7.42: H- and J-Frame Termination Options

Termination Letter
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.

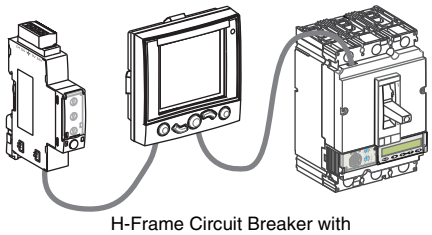
H D L 3 6 0 1 5 T
└ Termination Letter

◊ For N and D pricing, add termination pricing on page 7-45 to price. For S pricing, add termination pricing on page 7-41 to price.

J-Frame
Micrologic™ Trip Unit

Table 7.43: H- and J-Frame Interrupting Ratings

Voltage	Interrupting Rating				
	D	G	J	L	R
240 Vac	25 KA	65 kA	100 kA	125 kA	200 kA
480 Vac	18 kA	35 kA	65 kA	100 kA	200 kA
600 Vac	14 kA	18 kA	25 kA	50 kA	100 kA



H-Frame Circuit Breaker with
Optional FDM and IFM Modules

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QBL 2P
70–250 A

QBL 3P
70–250 A

Table 7.44: PowerPact Q-Frame▲250 A Thermal-Magnetic Circuit Breaker (240 Vac)

Ampere Rating	Fixed AC Magnetic Trip		Interrupting Rating								Terminal Wire Range
			B		D		G		J		
	Hold	Trip	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	
2P, 240 Vac											
70 A	1000 A	1800 A	QBL22070	**474.00**	QDL22070	**1143.00**	QGL22070	**1521.00**	QJL22070	**1890.00**	#4 AWG - 300 kcmil Al/Cu
80 A	1000 A	1800 A	QBL22080	**474.00**	QDL22080	**1143.00**	QGL22080	**1521.00**	QJL22080	**1890.00**	
90 A	1000 A	1800 A	QBL22090	**474.00**	QDL22090	**1143.00**	QGL22090	**1521.00**	QJL22090	**1890.00**	
100 A	1200 A	2400 A	QBL22100	**474.00**	QDL22100	**1143.00**	QGL22100	**1521.00**	QJL22100	**1890.00**	
110 A	1200 A	2400 A	QBL22110	**474.00**	QDL22110	**1143.00**	QGL22110	**1521.00**	QJL22110	**1890.00**	
125 A	1200 A	2400 A	QBL22125	**474.00**	QDL22125	**1143.00**	QGL22125	**1521.00**	QJL22125	**1890.00**	
150 A	1200 A	2400 A	QBL22150	**474.00**	QDL22150	**1143.00**	QGL22150	**1521.00**	QJL22150	**1890.00**	
175 A	1200 A	2400 A	QBL22175	**474.00**	QDL22175	**1143.00**	QGL22175	**1521.00**	QJL22175	**1890.00**	
200 A	1200 A	2400 A	QBL22200	**474.00**	QDL22200	**1143.00**	QGL22200	**1521.00**	QJL22200	**1890.00**	
225 A	1200 A	2400 A	QBL22225	**474.00**	QDL22225	**1143.00**	QGL22225	**1521.00**	QJL22225	**1890.00**	
250 A■	1200 A	2400 A	QBL22250	**693.00**	QDL22250	**1544.00**	QGL22250	**1970.00**	QJL22250	**2348.00**	
3P, 240 Vac											
70 A	1000 A	1800 A	QBL32070	**1248.00**	QDL32070	**1784.00**	QGL32070	**2442.00**	QJL32070	**2796.00**	#4 AWG - 300 kcmil Al/Cu
80 A	1000 A	1800 A	QBL32080	**1248.00**	QDL32080	**1784.00**	QGL32080	**2442.00**	QJL32080	**2796.00**	
90 A	1000 A	1800 A	QBL32090	**1248.00**	QDL32090	**1784.00**	QGL32090	**2442.00**	QJL32090	**2796.00**	
100 A	1200 A	2400 A	QBL32100	**1248.00**	QDL32100	**1784.00**	QGL32100	**2442.00**	QJL32100	**2796.00**	
110 A	1200 A	2400 A	QBL32110	**1248.00**	QDL32110	**1784.00**	QGL32110	**2442.00**	QJL32110	**2796.00**	
125 A	1200 A	2400 A	QBL32125	**1248.00**	QDL32125	**1784.00**	QGL32125	**2442.00**	QJL32125	**2796.00**	
150 A	1200 A	2400 A	QBL32150	**1248.00**	QDL32150	**1784.00**	QGL32150	**2442.00**	QJL32150	**2796.00**	
175 A	1200 A	2400 A	QBL32175	**1248.00**	QDL32175	**1784.00**	QGL32175	**2442.00**	QJL32175	**2796.00**	
200 A	1200 A	2400 A	QBL32200	**1248.00**	QDL32200	**1784.00**	QGL32200	**2442.00**	QJL32200	**2796.00**	
225 A	1200 A	2400 A	QBL32225	**1248.00**	QDL32225	**1784.00**	QGL32225	**2442.00**	QJL32225	**2796.00**	
250 A■	1200 A	2400 A	QBL32250	**1812.00**	QDL32250	**2442.00**	QGL32250	**3150.00**	QJL32250	**3465.00**	

▲ Replacement lugs and electrical accessories are not available for PowerPact Q-frame circuit breakers.
■ 250 A requires the use of copper cables only.

Table 7.45: Q-Frame Termination Options

Termination Letter
A = I-Line (See Section 9)
E = Bolt-on I-Line (See Section 9)
F = No lugs
L = Lugs both ends
M = Lugs ON end, studs on OFF end
P = Lugs OFF end, studs on ON end

For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.

Q G L 3 2 2 0 0
└ Termination Letter

▼ Add TS suffix for studs on both ends without nuts and washers. See Catalog **0734CT0201** for additional information.

Table 7.46: Q-Frame Interrupting Ratings

Voltage	Interrupting Rating			
	B	D	G	J
240 Vac♦	10 kA	25 kA	65 kA	100 kA★

♦ Q-frame circuit breakers are 240 Vac only.
★ 3P QJ circuit breakers are rated at 208Y/120 Vac only.

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New!

Table 7.47: L-Frame 600 A Circuit Breakers with Lugs and Factory-Sealed Electronic Trip Units Suitable for Reverse Connection△✱

Electronic Trip Unit			Sensor Rating	Cat. No.□	Interrupting Rating (2nd Letter of Catalog Number)										Terminal
					D		G		J ◊		L ◊		R ◊		
Type	Function	Trip Unit			$ Price										
					80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	
600 Vac, 50/60 Hz, 3P															
Micrologic Standard	LI	3.3☆	250 A	L( )L36250(C)U31X	**4827.00**	**5648.00**	**5081.00**	**5945.00**	**8478.00**	**9919.00**	**9918.00**	**11604.00**	**11406.00**	**13345.00**	AL400L61K3▽
			400 A 600 A	L( )L36400(C)U31X L( )L36600U31X	**4827.00** **7109.00**	**5648.00** —	**5081.00** **7484.00**	**5945.00** —	**8478.00** **10541.00**	**9919.00** —	**9918.00** **11837.00**	**11604.00** —	**11406.00** **13613.00**	**13345.00** —	AL600LS52K3◒
Micrologic Standard	LSI	3.3S☆	250 A	L( )L36250(C)U33X	**5391.00**	**6211.00**	**5674.00**	**6538.00**	**9071.00**	**10513.00**	**10511.00**	**12198.00**	**12088.00**	**14028.00**	AL400L61K3▽
			400 A 600 A	L( )L36400(C)U33X L( )L36600U33X	**5391.00** **7673.00**	**6211.00** —	**5674.00** **8077.00**	**6538.00** —	**9071.00** **11134.00**	**10513.00** —	**10511.00** **12430.00**	**12198.00** —	**12088.00** **14295.00**	**14028.00** —	AL600LS52K3◒
Micrologic Ammeter	LSI	5.3A	400 A 600 A	L( )L36400(C)U43X L( )L36600U43X	**6253.00** **8535.00**	**7073.00** —	**6582.00** **8984.00**	**7445.00** —	**9979.00** **12041.00**	**11420.00** —	**11419.00** **13337.00**	**13105.00** —	**13132.00** **15338.00**	**15071.00** —	AL600LS52K3◒
Micrologic Energy	LSI	5.3E	400 A 600 A	L( )L36400(C)U53X L( )L36600U53X	**7200.00** **9483.00**	**8021.00** —	**7579.00** **9982.00**	**8443.00** —	**10976.00** **13039.00**	**12418.00** —	**12416.00** **14335.00**	**14103.00** —	**14278.00** **16485.00**	**16218.00** —	
Micrologic Ammeter	LSIG	6.3A	400 A 600 A	L( )L36400(C)U44X L( )L36600U44X	**8149.00** **10431.00**	**8969.00** —	**8578.00** **10980.00**	**9441.00** —	**11975.00** **14037.00**	**13416.00** —	**13415.00** **15333.00**	**15101.00** —	**15427.00** **17633.00**	**17366.00** —	
Micrologic Energy	LSIG	6.3E	400 A 600 A	L( )L36400(C)U54X L( )L36600U54X	**9097.00** **11379.00**	**9917.00** —	**9575.00** **11978.00**	**10439.00** —	**12972.00** **15035.00**	**14414.00** —	**14412.00** **16331.00**	**16099.00** —	**16574.00** **18781.00**	**18514.00** —	
600 Vac, 50/60 Hz, 4P															
Micrologic Standard	LI	3.3	250 A	L( )L46250(C)U31X	**5327.00**	**6233.00**	**5581.00**	**6530.00**	**8978.00**	**10501.00**	**10418.00**	**12189.00**	**11981.00**	**14017.00**	AL400L61K4▽
			400 A 600 A	L( )L46400(C)U31X L( )L46600U31X	**6227.00** **8509.00**	**6233.00** —	**6481.00** **8884.00**	**7583.00** —	**9878.00** **11941.00**	**11557.00** —	**11318.00** **13237.00**	**13242.00** —	**13016.00** **15223.00**	**15228.00** —	AL600LS52K4◒
Micrologic Standard	LSI	3.3S	250 A	L( )L46250(C)U33X	**5891.00**	**6796.00**	**6174.00**	**7123.00**	**9571.00**	**11098.00**	**11011.00**	**12783.00**	**12663.00**	**14700.00**	AL400L61K4▽
			400 A 600 A	L( )L46400(C)U33X L( )L46600U33X	**6791.00** **9073.00**	**7849.00** —	**7074.00** **9477.00**	**8176.00** —	**10471.00** **12534.00**	**12151.00** —	**11911.00** **13830.00**	**13836.00** —	**13698.00** **15905.00**	**15911.00** —	AL600LS52K4◒
Micrologic Ammeter	LSI	5.3A	400 A 600 A	L( )L46400(C)U43X L( )L46600U43X	**7653.00** **9935.00**	**8711.00** —	**7982.00** **10384.00**	**9083.00** —	**11379.00** **13441.00**	**13058.00** —	**12819.00** **14737.00**	**14743.00** —	**14742.00** **16948.00**	**16954.00** —	AL600LS52K4◒
Micrologic Energy	LSI	5.3E	400 A 600 A	L( )L46400(C)U53X L( )L46600U53X	**8600.00** **10883.00**	**9659.00** —	**8979.00** **11382.00**	**10081.00** —	**12376.00** **14439.00**	**14056.00** —	**13816.00** **15735.00**	**15741.00** —	**15888.00** **18095.00**	**18102.00** —	
Micrologic Ammeter	LSIG	6.3A	400 A 600 A	L( )L46400(C)U44X L( )L46600U44X	**9549.00** **11831.00**	**10607.00** —	**9978.00** **12380.00**	**11079.00** —	**13375.00** **15437.00**	**15054.00** —	**14815.00** **16733.00**	**16739.00** —	**17037.00** **19243.00**	**19250.00** —	
Micrologic Energy	LSIG	6.3E	400 A 600 A	L( )L46400(C)U54X L( )L46600U54X	**10497.00** **12779.00**	**11555.00** —	**10975.00** **13378.00**	**12077.00** —	**14372.00** **16435.00**	**16052.00** —	**15812.00** **17731.00**	**17791.00** —	**18184.00** **20391.00**	**20460.00** —	

△ See Supplemental Digest page 3-4 for circuit breakers with field-interchangeable trip units
□ For 100% rated circuit breakers (250 A and 400 A only), add a "C" in the 9th character place (for example, LGL36400CU31X)
◊ Circuit breakers with J, L, and R interrupting ratings are UL certified as current limiting.
☆ 3P circuit breakers with this trip unit can be used for 2P applications.
▽ AL400L61K3 terminal wire ranges are (1) 2 AWG–600 kcmil Cu or 1) 2 AWG–500 kcmil Al.
◒ AL600LS52K3 terminal wire range is (2) 2/0 AWG–500 kcmil Al/Cu.
✱ For applications requiring communicatins see page 7-49.

L-Frame Circuit Breaker

Table 7.48: Termination Options

Termination Letter	Termination Option
A	I-Line (See Section 9)
F	No lugs
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.

L G L 3 6 6 0 0 U 4 4 X
└ Termination Letter

◆ For N and D pricing, add termination pricing on page 7-45 to price. For S pricing, add termination pricing on page 7-41 to price.

Table 7.49: Interrupting Ratings

Voltage	Interrupting Rating				
	D	G	J	L	R
240 Vac	25 kA	65 kA	100 kA	125 kA	200 kA
480 Vac	18 kA	35 kA	65 kA	100 kA	200 kA
600 Vac	14 kA	18 kA	25 kA	50 kA	100 kA

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M-Frame Circuit Breaker

Table 7.50: M-Frame 800 A, Basic Electronic Trip System Type ET 1.0◑ Factory-Sealed Trip Unit

Electronic Trip Unit		Sensor Rating	Interrupting Rating				Terminal Wire Range (AWG/kcmil)
			G		J		
Type	Function		Cat. No.	$ Price	Cat. No.	$ Price	
2P, 600 Vac 50/60 Hz							
Basic	Fixed Long-time, Adjustable Instantaneous Trip	300 A	MGL26300	**5960.00**	MJL26300	**7829.00**	AL800M23K (3) 3/0–500 Al/Cu
		350 A	MGL26350	**5960.00**	MJL26350	**7829.00**	
		400 A	MGL26400	**5960.00**	MJL26400	**7829.00**	
		450 A	MGL26450	**5960.00**	MJL26450	**7829.00**	
		500 A	MGL26500	**5960.00**	MJL26500	**7829.00**	
		600 A	MGL26600	**5960.00**	MJL26600	**7829.00**	
		700 A	MGL26700	**7719.00**	MJL26700	**9657.00**	
		800 A	MGL26800	**7719.00**	MJL26800	**9657.00**	
3P, 600 Vac 50/60 Hz							
Basic	Fixed Long-time, Adjustable Instantaneous Trip	300 A	MGL36300	**7560.00**	MJL36300	**9456.00**	AL800M23K (3) 3/0–500 Al/Cu
		350 A	MGL36350	**7560.00**	MJL36350	**9456.00**	
		400 A	MGL36400	**7560.00**	MJL36400	**9456.00**	
		450 A	MGL36450	**7560.00**	MJL36450	**9456.00**	
		500 A	MGL36500	**7560.00**	MJL36500	**9456.00**	
		600 A	MGL36600	**7560.00**	MJL36600	**9456.00**	
		700 A	MGL36700	**9927.00**	MJL36700	**11882.00**	
		800 A	MGL36800	**9927.00**	MJL36800	**11882.00**	

◑ The ET 1.0 trip unit cannot be field replaced or have the long-time trip point setting adjusted. It is considered an electronic equivalent of a thermal-magnetic circuit breaker.

Table 7.51: Termination Options

Termination Letter	Termination Option
A	I-Line (See Section 9)
F	No lugs
L	Lugs both ends
M	Lugs ON end, terminal nut kit OFF end
P	Lugs OFF end, terminal nut kit ON end

For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.

M G L 3 6 4 0 0
└ Termination Letter

Table 7.52: 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

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Table 7.53: P-Frame 1200 A (600 Vac, 50/60 Hz) 3P▲ Circuit Breaker with Electronic Trip Unit

Electronic Trip Unit			Sensor Rating	Cat. No.■♦	$ Price								Terminal Wire Range
					G■		J■		K■		L■★		
Type	Function	Trip Unit			80% Rated	100% Rated♦	80% Rated	100% Rated♦	80% Rated	100% Rated ♦	80% Rated	100% Rated♦	
Basic Electronic Trip Unit (Not Interchangeable)	Fixed long-time, Adjustable Instantaneous	ET1.0I	600 A	P( )L36060	13905.00	—	14783.00	—	14783.00	—	15660.00	—	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			800 A	P( )L36080		—		—		—		—	
			1000 A	P( )L36100	19049.00	—	20250.00	—	20250.00	—	21452.00	—	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120		—		—		—		—	
Micrologic Interchangeable Standard Trip Unit	LI	3.0	250 A	P( )L36025(C)U31A	14693.00	21510.00	15570.00	22868.00	15570.00	22868.00	16448.00	24224.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U31A									
			600 A	P( )L36060(C)U31A									
			800 A	P( )L36080(C)U31A									
			1000 A	P( )L36100(C)U31A	19836.00	30239.00	21038.00	32147.00	21038.00	32147.00	22239.00	34052.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U31A									
	LSI	5.0	250 A	P( )L36025(C)U33A	15032.00	21812.00	15909.00	23187.00	15909.00	23187.00	16787.00	24564.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U33A									
			600 A	P( )L36060(C)U33A									
			800 A	P( )L36080(C)U33A									
			1000 A	P( )L36100(C)U33A	20177.00	30540.00	21378.00	32466.00	21378.00	32466.00	22580.00	34392.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U33A									
Micrologic Interchangeable Ammeter Trip Unit	LI	3.0A	250 A	P( )L36025(C)U41A	15543.00	22266.00	16421.00	23670.00	16421.00	23670.00	17298.00	25076.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U41A									
			600 A	P( )L36060(C)U41A									
			800 A	P( )L36080(C)U41A									
			1000 A	P( )L36100(C)U41A	20688.00	30995.00	21890.00	32949.00	21890.00	32949.00	23091.00	34904.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U41A									
	LSI	5.0A	250 A	P( )L36025(C)U43A	17043.00	23597.00	17921.00	25085.00	17921.00	25085.00	18798.00	26574.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U43A									
			600 A	P( )L36060(C)U43A									
			800 A	P( )L36080(C)U43A									
			1000 A	P( )L36100(C)U43A	22185.00	32324.00	23387.00	34364.00	23387.00	34364.00	24590.00	36402.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U43A									
	LSIG	6.0A	250 A	P( )L36025(C)U44A	18909.00	25256.00	19787.00	26849.00	19787.00	26849.00	20664.00	28442.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U44A									
			600 A	P( )L36060(C)U44A									
			800 A	P( )L36080(C)U44A									
			1000 A	P( )L36100(C)U44A	24054.00	33983.00	25256.00	36128.00	25256.00	36128.00	26457.00	38270.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U44A									
Micrologic Interchangeable Power Trip Unit	LSI	5.0P	250 A	P( )L36025(C)U63AE1	21455.00	27516.00	22332.00	29252.00	22332.00	29252.00	23210.00	30986.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U63AE1									
			600 A	P( )L36060(C)U63AE1									
			800 A	P( )L36080(C)U63AE1									
			1000 A	P( )L36100(C)U63AE1	26597.00	36243.00	27800.00	38529.00	27800.00	38529.00	29001.00	40814.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U63AE1									
	LSIG	6.0P	250 A	P( )L36025(C)U64AE1	22536.00	28476.00	23414.00	30272.00	23414.00	30272.00	24291.00	32067.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U64AE1									
			600 A	P( )L36060(C)U64AE1									
			800 A	P( )L36080(C)U64AE1									
			1000 A	P( )L36100(C)U64AE1	27680.00	37203.00	28881.00	39551.00	28881.00	39551.00	30083.00	41895.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U64AE1									
Micrologic Interchangeable Harmonic Trip Unit	LSI	5.0H	250 A	P( )L36025(C)U73AE1	25538.00	31140.00	26415.00	33104.00	26415.00	33104.00	27291.00	35067.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U73AE1									
			600 A	P( )L36060(C)U73AE1									
			800 A	P( )L36080(C)U73AE1									
			1000 A	P( )L36100(C)U73AE1	30680.00	39867.00	31881.00	42381.00	31881.00	42381.00	33083.00	44895.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U73AE1									
	LSIG	6.0H	250 A	P( )L36025(C)U74AE1	26619.00	32100.00	27497.00	34125.00	27497.00	34125.00	28374.00	36150.00	AL800M23K (3) 3/0 AWG–500 kcmil Al or Cu
			400 A	P( )L36040(C)U74AE1									
			600 A	P( )L36060(C)U74AE1									
			800 A	P( )L36080(C)U74AE1									
			1000 A	P( )L36100(C)U74AE1	31761.00	40829.00	32963.00	43404.00	32963.00	43404.00	34166.00	45978.00	AL1200P25K (4) 3/0 AWG–500 kcmil Al or Cu
			1200 A	P( )L36120(C)U74AE1									

▲ For 2P and 4P information see Catalog 0612CT0101.
■ To complete the catalog number, replace the ( ) with the appropriate interrupting rating (G, J, K or L).
♦ For 100% rated circuit breakers add a "C" in the 9th character place. For example, the catalog number for a 100% trip unit with LI trip functions at 250A would be PGL36025**C**U31A.
★ For all L interrupting rating, change the 5th character (voltage rating) from a 6 (600V) to a 4 (480V); for example, PLL3**4**025U31A. The 480V AIR is standard 100 kA.

Table 7.54: P-Frame Termination Options

Termination Letter
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
D = Drawout▲
A = I-Line (See Section 9)

For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.

P G L 3 6 0 4 0 U 4 1 A
└ Termination Letter

▲ For D pricing add termination pricing on page 7-45.

Table 7.55: P-Frame and R-Frame Interrupting Ratings

Voltage	P-Frame Interrupting Rating				R-Frame Interrupting Rating			
	G	J	K	L	G	J	K	L
240 Vac	65 kA	100 kA	65 kA	125 kA	65 kA	100 kA	65 kA	125 kA
480 Vac	35 kA	65 kA	50 kA	100 kA	35 kA	65 kA	65 kA	100 kA
600 Vac	18 kA	25 kA	50 kA	25 kA	18 kA	25 kA	65 kA	50 kA

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Table 7.56: R-Frame 3000 A (600 Vac, 50/60 Hz) 3P▲ Circuit Breaker with Electronic Trip Unit

Electronic Trip Unit			Sensor Rating	Cat. No.■♦	$ Price							
					G■★		J■★		K■★		L■★	
Type	Function	Trip Unit			80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated	80% Rated	100% Rated
Basic Electronic Trip Unit (Not Interchangeable)	Fixed long-time, Adjustable Instantaneous	ET1.0I	1200 A	R( )F36120	22373.00	—	23549.00	—	23549.00	—	24723.00	—
			1600 A	R( )F36160		—		—		—		—
			2000 A	R( )F36200		—		—		—		—
			2500 A	R( )F36250	35639.00	—	37512.00	—	37512.00	—	39383.00	—
Micrologic Interchangeable Standard Trip Unit	LI	3.0	600 A	R( )F36060(C)U31A	23160.00	27759.00	24336.00	29301.00	24336.00	29301.00	25511.00	30843.00
			800 A	R( )F36080(C)U31A								
			1000 A	R( )F36100(C)U31A								
			1200 A	R( )F36120(C)U31A								
			1600 A	R( )F36160(C)U31A		29775.00		31430.00		31430.00		33083.00
			2000 A	R( )F36200(C)U31A		35042.00		36989.00		36989.00		38936.00
			2500 A	R( )F36250(C)U31A	36426.00	57075.00	38300.00	60248.00	38300.00	60248.00	40170.00	63417.00
			3000 A	R( )F36300(C)U31A	54027.00	62451.00	57236.00	65738.00	57236.00	65738.00	60246.00	69024.00
	LSI	5.0	600 A	R( )F36060(C)U33A	23501.00	28065.00	24675.00	29624.00	24675.00	29624.00	25851.00	31184.00
			800 A	R( )F36080(C)U33A								
			1000 A	R( )F36100(C)U33A								
			1200 A	R( )F36120(C)U33A								
			1600 A	R( )F36160(C)U33A		30081.00		31752.00		31752.00		33423.00
			2000 A	R( )F36200(C)U33A		35348.00		37313.00		37313.00		39276.00
			2500 A	R( )F36250(C)U33A	36767.00	57383.00	38640.00	60570.00	38640.00	60570.00	40511.00	63758.00
			3000 A	R( )F36300(C)U33A	54513.00	62757.00	57542.00	66060.00	57542.00	66060.00	60570.00	69363.00
Micrologic Interchangeable Ammeter Trip Unit	LI	3.0A	600 A	R( )F36060(C)U41A	24012.00	28493.00	25188.00	30075.00	25188.00	30075.00	26363.00	31658.00
			800 A	R( )F36080(C)U41A								
			1000 A	R( )F36100(C)U41A								
			1200 A	R( )F36120(C)U41A								
			1600 A	R( )F36160(C)U41A		30509.00		32202.00		32202.00		33897.00
			2000 A	R( )F36200(C)U41A		35775.00		37763.00		37763.00		39750.00
			2500 A	R( )F36250(C)U41A	37278.00	57809.00	39152.00	61020.00	39152.00	61020.00	41022.00	64232.00
			3000 A	R( )F36300(C)U41A	54918.00	63185.00	57969.00	66510.00	57969.00	66510.00	61020.00	69836.00
	LSI	5.0A	600 A	R( )F36060(C)U43A	25511.00	29874.00	26685.00	31533.00	26685.00	31533.00	27860.00	33194.00
			800 A	R( )F36080(C)U43A								
			1000 A	R( )F36100(C)U43A								
			1200 A	R( )F36120(C)U43A								
			1600 A	R( )F36160(C)U43A		31889.00		33662.00		33662.00		35433.00
			2000 A	R( )F36200(C)U43A		37158.00		39221.00		39221.00		41286.00
			2500 A	R( )F36250(C)U43A	38777.00	59190.00	40649.00	62478.00	40649.00	62478.00	42521.00	65768.00
			3000 A	R( )F36300(C)U43A	56231.00	64569.00	59354.00	67968.00	59354.00	67968.00	62480.00	71367.00
	LSIG	6.0A	600 A	R( )F36060(C)U44A	27378.00	31556.00	28553.00	33308.00	28553.00	33308.00	29729.00	35061.00
			800 A	R( )F36080(C)U44A								
			1000 A	R( )F36100(C)U44A								
			1200 A	R( )F36120(C)U44A								
			1600 A	R( )F36160(C)U44A		33570.00		35436.00		35436.00		37301.00
			2000 A	R( )F36200(C)U44A		38838.00		40995.00		40995.00		43154.00
			2500 A	R( )F36250(C)U44A	40644.00	60870.00	43368.00	64253.00	43368.00	64253.00	44388.00	67635.00
			3000 A	R( )F36300(C)U44A	57827.00	66255.00	60965.00	69743.00	60965.00	69743.00	64254.00	73230.00
Micrologic Interchangeable Power Trip Unit	LSI	5.0P	600 A	R( )F36060(C)U63AE1	29922.00	33845.00	31097.00	35724.00	31097.00	35724.00	32273.00	37605.00
			800 A	R( )F36080(C)U63AE1								
			1000 A	R( )F36100(C)U63AE1								
			1200 A	R( )F36120(C)U63AE1								
			1600 A	R( )F36160(C)U63AE1		35859.00		37853.00		37853.00		39845.00
			2000 A	R( )F36200(C)U63AE1		41129.00		43413.00		43413.00		45698.00
			2500 A	R( )F36250(C)U63AE1	43188.00	63161.00	45062.00	66671.00	45062.00	66671.00	46932.00	70179.00
			3000 A	R( )F36300(C)U63AE1	60003.00	68553.00	63338.00	72161.00	63338.00	72161.00	66671.00	75858.00
	LSIG	6.0P	600 A	R( )F36060(C)U64AE1	31004.00	34818.00	32180.00	36753.00	32180.00	36753.00	33354.00	38687.00
			800 A	R( )F36080(C)U64AE1								
			1000 A	R( )F36100(C)U64AE1								
			1200 A	R( )F36120(C)U64AE1								
			1600 A	R( )F36160(C)U64AE1		36834.00		38880.00		38880.00		40926.00
			2000 A	R( )F36200(C)U64AE1		42102.00		44441.00		44441.00		46779.00
			2500 A	R( )F36250(C)U64AE1	44270.00	64136.00	46143.00	67698.00	46143.00	67698.00	48014.00	71261.00
			3000 A	R( )F36300(C)U64AE1	60929.00	69528.00	64313.00	73188.00	64313.00	73188.00	67698.00	76848.00
Micrologic Interchangeable Harmonic Trip Unit	LSI	5.0H	600 A	R( )F36060(C)U73AE1	34005.00	37518.00	35180.00	39603.00	35180.00	39603.00	36354.00	41687.00
			800 A	R( )F36080(C)U73AE1								
			1000 A	R( )F36100(C)U73AE1								
			1200 A	R( )F36120(C)U73AE1								
			1600 A	R( )F36160(C)U73AE1		39534.00		41730.00		41730.00		43928.00
			2000 A	R( )F36200(C)U73AE1		44801.00		47291.00		47291.00		49779.00
			2500 A	R( )F36250(C)U73AE1	47271.00	66836.00	49143.00	70548.00	49143.00	70548.00	51015.00	74262.00
			3000 A	R( )F36300(C)U73AE1	63494.00	72236.00	67020.00	76038.00	67020.00	76038.00	70550.00	79841.00
	LSIG	6.0H	600 A	R( )F36060(C)U74AE1	35087.00	38493.00	36261.00	40631.00	36261.00	40631.00	37436.00	42770.00
			800 A	R( )F36080(C)U74AE1								
			1000 A	R( )F36100(C)U74AE1								
			1200 A	R( )F36120(C)U74AE1								
			1600 A	R( )F36160(C)U74AE1		40509.00		42758.00		42758.00		45009.00
			2000 A	R( )F36200(C)U74AE1		45776.00		48320.00		48320.00		50862.00
			2500 A	R( )F36250(C)U74AE1	48353.00	67809.00	50225.00	71576.00	50225.00	71576.00	52097.00	75344.00
			3000 A	R( )F36300(C)U74AE1	64419.00	73212.00	67997.00	77066.00	67997.00	77066.00	71577.00	80919.00

Note: R-frame circuit breakers can be bus- or cable-connected. For cable connections, optional terminal pad kit RLTB or equivalent bus structure is required. Each RLTB kit contains terminal pads for one end of the circuit breaker only and has provisions for mounting a maximum of 8 lugs per phase (9 lugs for 3000 A). RLTB kits are included with 2500 A 100% rated circuit breakers. The RL3TB kits are included with the 3000 A, 80% and 100% rated circuit breakers. For other circuit breakers, order terminal pad kit (RLTB) and optional lugs separately. See pages 7-42–7-44.

▲ For 2P and 4P information see Catalog **0612CT0101**.

■ To complete the catalog number, replace the blank ( ) with the appropriate interrupting rating (G, J, K or L).

♦ Listed catalog numbers are for 80% rated circuit breakers. For 100% rated circuit breakers add a "C" in the 9th character place. For example, the catalog number for a 100% standard trip unit with LI trip functions at 2500A would be RGF36250**C**U31A.

★ See page 7-27 for interrupting ratings table.

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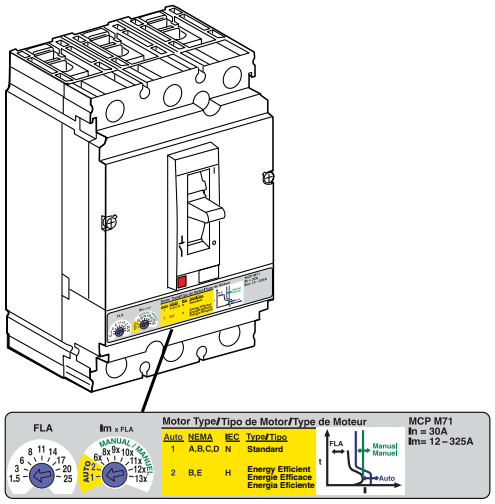

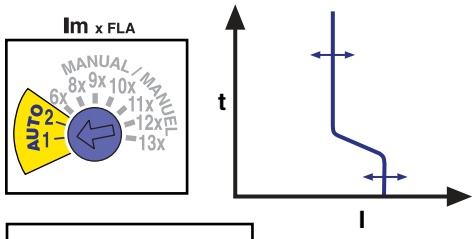

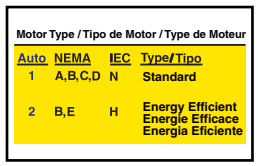

Motor Type / Tipo de Motor / Type de Moteur			
Auto	NEMA	IEC	Type/Tipo
1	A,B,C,D	N	Standard
2	B,E	H	Energy Efficient Energie Efficace Energia Eficiente

PowerPact H- and J-frame electronic Motor Circuit Protectors (MCP) are magnetic-only instantaneous-trip circuit breakers. They are designed to offer short circuit protection and are National Electrical Code (NEC) compliant when installed as part of a combination controller having motor overload protection. MCP circuit breakers accept the same accessories and terminals as the equivalent thermal-magnetic circuit breakers.

Determine the hp rating from the nameplate of the motor. Select a MCP with an ampere rating recommended for the hp and voltage involved. When using the automatic settings the MCP microprocessor automatically adjusts the trip settings for both current and time to align with the start-up characteristic for the motor type, whether it is a standard or energy-efficient motor. This includes a dampening means to accommodate a transient motor in-rush current without nuisance tripping of the circuit breaker.

Table 7.57: H- and J-Frame Electronic Motor Circuit Protectors (MCP)

Frame	Sensor Rating	Full Load Amperes Range	Adjustable Instantaneous Trip Range	Suffix	Interrupting Rating J (See SCCR Table Below)		Interrupting Rating L (See SCCR Table Below)	
					Cat. No.	$ Price	Cat. No.	$ Price
H-Frame	30 A	1.5–25 A	9–325 A	M71	HJL36030M71	**1089.00**	HLL36030M71	**1223.00**
	50 A	14–42 A	84–546 A	M72	HJL36050M72	**1385.00**	HLL36050M72	**1553.00**
	100 A	30–80 A	180–1040 A	M73	HJL36100M73	**1646.00**	HLL36100M73	**1827.00**
	150 A	58–130 A	348–1690 A	M74	HJL36150M74	**2069.00**	HLL36150M74	**2306.00**
J-Frame	250 A	114–217 A	684–2500 A	M75	JJL36250M75	**2393.00**	JLL36250M75	**2673.00**

Table 7.58: Maximum Rating or Setting of Motor Protective Devices▲

Type of Motor		Percentage of Full-load Current	
		Setting	Not to Exceed■
A, B, C, D	Standard	800%	1300%
B, E	Energy Efficient	1100%	1700%

▲ Based on 2005 NEC Table 430.52.

■ See NEC Exception No. 1 to Table 430.52. 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."

Table 7.59: MCP Selection by HP Ratings♦ of Induction-type Squirrel-Cage and Wound-rotor Motors★

3Ø 60 Hz Voltages▼				Full-Load Amperes	Suffix
200 Vac	230 Vac	460 Vac	575 Vac		
.5–5	.5–7.5	.75–15	1–20	1.5–25	M71
5–10	5–15	10–30	15–40	14–42	M72
10–25	15–30	25–60	30–75	30–80	M73
20–40	25–50	50–100	60–125	58–130	M74
40–60	50–75	100–150	125–200	114–217	M75

♦ Based on 2005 NEC Table 430.250.

★ Per NEC 430.3, part-winding motors should select two circuit breakers, each 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.

▼ Listed voltages are rated motor voltages. Corresponding system voltages are 200 Vac, 220–240 Vac, 440–480 Vac and 550–600 Vac. Select wire and circuit breakers based on horsepower rather than nameplate full-load current per NEC 430.6 (A) for general motor applications.

Short Circuit Current Rating (SCCR)

Tested to meet NEC and UL508A requirements for short circuit current ratings as part of an approved combination controller.

Table 7.60: Short Circuit Current Ratings (SCCR)

Contactor/Starter	Interrupting Rating J			Interrupting Rating L		
	200–240 Vac	480 Vac	600 Vac	200–240 Vac	480 Vac	600 Vac
Tesys D-line and F-line	100 kA	65 kA	25 kA	125 kA	100 kA	50 kA
NEMA Type S	100 kA	65 kA	25 kA	125 kA	100 kA	50 kA

See www.us.schneider-electric.us for specific ratings and combination ID numbers.

To select combination starters and motor controllers using MCP's meeting NEC Article 430, refer to pages 16-35—16-37.

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Table 7.61: Application of PowerPact™ H-Frame and J-Frame Electronic Motor Circuit Protectors (MCP)

Horsepower Rating of Induction-type Squirrel-cage and Wound-rotor Motors 3Ø 60 Hz					NEC Full Load Amperes	PowerPact H-Frame and J-Frame Electronic MCP	
Starter Size	200 Vac	230 Vac	480 Vac	575 Vac			
				1/2	0.9 A		
			1/2		1.1 A		
				3/4	1.3 A		
			3/4	1	1.7 A		
			1		2.1 A		
		1/2			2.2 A		
				1-1/2	2.4 A		
	1/2				2.5 A		
				2	2.7 A		
			1-1/2		3 A		
00		3/4			3.2 A		
			2		3.4 A		
	3/4				3.7 A		
				3	3.9 A		
		1			4.2 A		
	1				4.8 A	HJL36030M71 and HLL36030M71 1/2–10 hp	
			3		4.8 A		
		1-1/2			6 A		
				5	6.1 A		
		2			6.8 A		
	1-1/2				6.9 A		
			5		7.6 A		
	2				7.8 A		
0				7-1/2	9 A		
		3			9.6 A		
	3		7-1/2		11 A		
			10	10	14 A		
		5			15.2 A		
				15	17 A		
1	5		15		17.5 A		
		7-1/2			21 A		
				20	22 A		HJL36050M72 and HLL36050M72 10–25 hp
	7-1/2		20		25.3 A		
				25	27 A		
2		10			28 A		
	10			30	30 A		
			25		32 A		
					32.2 A		
			30		34 A		
				40	40 A		
		15			41 A		
					42 A		
	15		40		48.3 A	HJL36100M73 and HLL36100M73 15–50 hp	
3				50	52 A		
		20			54 A		
	20			60	62 A		
			50		65 A		
		25			68 A		
			60	75	77 A		
	25				78.2 A		
		30			80 A		HJL36150M74 and HLL36150M74 30–100 hp
	30				92 A		
4			75		96 A		
		40		100	99 A		
					104 A		
	40		100		120 A		
				125	124 A		
		50			125 A		
					130 A		
			125	150	144 A	JJL36250M75 and JLL36250M75 50–150 hp	
	50				150 A		
5		60			154 A		
					156 A		
	60		150		177.1 A		
					180 A		
		75		200	192 A		
	75				221 A		
			200		240 A		
		100			248 A		

Shaded area is not covered by J-frame electronic motor circuit protector.

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Motor Circuit Protector

Motor Protector Circuit Breaker

Motor Circuit Protectors

Mag-Gard™ Motor Circuit Protectors (MCP) are instantaneous-trip magnetic-only circuit breakers. They 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.

All Mag-Gard circuit breakers will accept the same lugs and accessories as equivalent circuit breakers. Mag-Gard circuit breakers are available with I-Line construction.☆ High-interruption (H) construction Mag-Gard circuit breakers (LHL) are also available.

Table 7.62: Magnetic Only 3 Pole, 600 Vac, 50/60 Hz☆—Three Device Solutions□

Ampere Rating		Trip Unit	Adjustable△ Trip Range (A)	24 Vdc Multiplier	Cat. No.	$ Price
LAL	400		500–1000 A	High = 1.2 Low = 1.4	LAL3640022M	4619.00
			750–1600 A		LAL3640028M	4619.00
			1000–2000 A		LAL3640030M	4619.00
			1125–2250 A		LAL3640031M	4619.00
			1250–2500 A		LAL3640032M	4619.00
			1500–3000 A		LAL3640033M	4619.00
			1750–3500 A		LAL3640035M	4619.00
			2000–4000 A		LAL3640036M	4619.00

For PowerPact L- and P-Frames, an instantaneous-only version of the electronic trip circuti breaker is also available for motor circuit protection. These MCPs comply with NEC® requirements for providing short-circuit protection when installed as part of a Listed combination controller having motor overload protection.

Table 7.63: Magnetic Only 3 Pole, 600 Vac, 50/60 Hz☆—Three Device Solutions□

Sensor Rating		Trip Unit	Adjustable△ Trip Range (A)	Interrupting Rating							
				G		J		L		R	
				Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
PowerPact L-Frame☆	400	1.3 M	500–1200%	LGL36400M37X	4619.00	LJL36400M37X	4727.00	LLL36400M37X	5007.00	LRL36400M37X	5307.00
	600		500–1200%	LGL36600M37X	6790.00	LJL36600M37X	6949.00	LLL36600M37X	7360.00	LRL36600M37X	7802.00
PowerPact PJL, PLL☆	600		1200–10000 A	—	—	PJL36060M68	7560.00	PLL34060M68	8006.00	—	—
	800		1200–10000 A	—	—	PJL36080M68	9927.00	PLL34080M68	10514.00	—	—
	1000		1500–10000 A	—	—	PJL36100M69	12705.00	PLL34100M69	13455.00	—	—
	1200		1800–10000 A	—	—	PJL36120M70	16517.00	PLL34120M70	17492.00	—	—

△ UL magnetic trip tolerances are -20%/+30% from the nominal values shown.
□ Three-device solutions are the traditional solutionss: motor circuit protector plus motor starter plus overload relay.
◊ 250 Vdc ratings are available. No UL component recognition
☆ These electronic magnetic only motor circuit protectors are available with I-Line constructions. Consult the factory.

Motor Protector Circuit Breakers

New!

Motor protection circuit breakers provide built-in thermal and magnetic protection. They are used in two-device motor feeder solutions to provide protection against short-circuits, overloads, and phase unbalance.

Table 7.64: H-Frame (150 A), J-Frame (250 A) and L-Frame (600 A) Electronic Motor Protector Circuit Breakers (UL Ratings)—Two Device Solutions▽

Electronic Trip Unit Type	Frame	Sensor Rating	Trip Unit	Full Load Amperes Range (FLA)	Isd (x FLA)	Interrupting Rating							
						G		J		L		R	
						Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
Standard◒	H-Frame	30	2.2 M	14–25	5-13 x FLA	HGL36030M38X	1608.00	HJL36030M38X	1658.00	HLL36030M38X	1812.00	HRL36030M38X	1993.00
		50		14–42	5-13 x FLA	HGL36050M38X	1938.00	HJL36050M38X	1998.00	HLL36050M38X	2191.00	HRL36050M38X	2410.00
		100		30–80	5-13 x FLA	HGL36100M38X	2229.00	HJL36100M38X	2298.00	HLL36100M38X	2506.00	HRL36100M38X	2757.00
		150		58–130	5-13 x FLA	HGL36150M38X	2701.00	HJL36150M38X	2785.00	HLL36150M38X	3057.00	HRL36150M38X	3363.00
	J-Frame	250		114–217	5-13 x FLA	JGL36250M38X	3105.00	JJL36250M38X	3201.00	JLL36250M38X	3523.00	JRL36250M38X	3875.00
	L-Frame	400	2.3 M	190–348	5-13 x FLA	LGL36400M38X	6041.00	LJL36400M38X	6160.00	LLL36400M38X	6468.00	LRL36400M38X	7115.00
		600		312–520	5-13 x FLA	LGL36600M38X	8429.00	LJL36600M38X	8604.00	LLL36600M38X	9156.00	LRL36600M38X	10072.00

▽ Two-device solutions (these electronic motor protector circuit breakers include short circuit and overload protection)
—1 electronic motor circuit protector with a Micrologic 2.2 M plus
—1 contactor
◒ The standard trip unit offers Class 5, 10 and 20 and phase unbalance or phase loss protection.

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Optional Lugs . . . . . .Page 7-42 and Supplemental Digest Pages 3-29–3-30
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To select combination starters and motor controllers using MCP's meeting NEC Article 430, refer to pages 16-35—16-37.

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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 7.65: 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

1. 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.
2. Determine motor hp rating from the motor nameplate.
3. Refer to the tables and select an instantaneous-trip circuit breaker with an ampere rating recommended for the hp and voltage involved.
4. 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.
5. 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 page 7-33 for those applications.
6. 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.
7. Based on NEC 430.52 and NEC Table 430.150. See page 7-31 for available Adjustable Instantaneous-Trip Circuit Breakers.

Table 7.66: PowerPact H-Frame and L-Frame Motor Protector Circuit Breaker

Hp Ratings of Induction Type Squirrel-Cage and Wound Rotor Motors 3Ø 60 Hz				Full Load Amperes▲	PowerPact Family Motor Protector Circuit Breaker Cat. No.■	Magnetic Trip Settings♦	
200 Vac	230 Vac	460 Vac	575 Vac			MIN	MAX
		10		14	H( )L36030M38X		
	5			15..2	H( )L36030M38X		
			15	17	H( )L36030M38X		
5				17.5	H( )L36030M38X		
		15		21	H( )L36030M38X		
	7-1/2		20	22	H( )L36030M38X		
7-1/2				25.3	H( )L36030M38X		
		20	25	27	H( )L36050M38X		
	10			28	H( )L36050M38X		
			30	32	H( )L36050M38X		
10				32.2	H( )L36050M38X		
		25		34	H( )L36050M38X		
		30		40	H( )L36050M38X		
			40	41	H( )L36050M38X		
	15			42	H( )L36050M38X		
15				48.3	H( )L36100M38X		
		40	50	52	H( )L36100M38X		
	20			54	H( )L36100M38X		
20			60	62	H( )L36100M38X	500%	1300%
		50		65	H( )L36100M38X		
75				221	L( )L36400M38X		
		200		240	L( )L36400M38X		
			250	242	L( )L36400M38X		
	100			248	L( )L36400M38X		
100				285	L( )L36400M38X		
			300	289	L( )L36400M38X		
		250		302	L( )L36400M38X		
	125			312	L( )L36400M38X		
			350	336	L( )L36400M38X		
125				359	L( )L36600M38X		
	150			360	L( )L36600M38X		
		300		361	L( )L36600M38X		
			400	382	L( )L36600M38X		
150		350		414	L( )L36600M38X		
			500	472	L( )L36600M38X		
		400		477	L( )L36600M38X		
	200			480	L( )L36600M38X		

Table 7.67: LAL Adjustable Instantaneous-Trip Circuit Breakers for Single Motor Circuit Protection

Hp Ratings of Induction Type Squirrel-Cage and Wound Rotor Motors 3Ø 60 Hz				Full Load Amperes▲	Mag-Gard Circuit Breaker Cat. No.	Magnetic Trip Settings♦	
200 Vac	230 Vac	460 Vac	575 Vac			MIN	MAX
75				221	LAL3640033M	700%	1400%
		200		240	LAL3640035M	700%	1500%
			250	242	LAL3640035M	700%	1400%
	100			248	LAL3640035M	700%	1400%
100				285	LAL3640036M	700%	1400%
			300	289	LAL3640036M	700%	1400%
		250		302	LAL3640036M	700%	1300%
	125			312	LAL3640036M	600%	1300%

▲ Motor full-load currents are taken from NEC Table 430.150. Select wire and circuit breakers on basis of horsepower rather than nameplate full-load current per NEC 430.6 (A) for general motor applications. Do not use these values to select overload relay thermal units. See Digest pages 14-129–14-152 for selection of thermal units when actual full load current is not known. The voltages listed are rated motor voltages. Corresponding nominal system voltages are 200–208, 220–240, 440–480 and 550–600 V.

■ To complete catalog number, replace the blank with the appropriate rating (G, J, or L). M38X is for standard trip units. For advanced trip units (LCD display, metering and communication, replace with M58X).

♦ Only MIN and MAX settings are shown, intermediate settings are available on all circuit breakers.

★ See NEC 430.52(A) for circuit breaker settings above 800%.

▼ If due to motor starting characteristics, trip settings at the 1300% maximum permitted level are needed, the next size Mag-Gard circuit breaker should be chosen.

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Table 7.68: Selection Tables for Conductors, Safety Switches and Thermal-Magnetic Circuit Breakers Based on 2005 NEC® Tables 430.147, 430.148 & 430.150

Horsepower Ratings									Full Load Amperage△	Amperage of Thermal-Magnetic◊▽ Inverse Time Circuit Breaker			QMB and Heavy Duty Switch with Time Delay Fuses□	Minimum Size metallic Conduit 75° C, C Wire Field-Installed Sized for 125% FLA▼		
Squirrel-Cage and Wound-Rotor Motors with Norm. Torque Characteritics Operating at usual Speeds 3Ø 60 Hz				1Ø 10 Hz ac			Average Direct Current Motors Operating at Base Speed			For Motor Code Letter B to E		For Motor Code Letter F to V☆		AWG kcmil	Conduit 3 W	
200 Vac■	230 Vac	460 Vac	575 Vac	115 Vac	200 Vac■	230 Vac	120 Vdc	240 Vdc		Ordinary Service♦	Heavy Service and Energy Efficient★				THHN THWN XHHW	THW
2		5		1/3	3/4	1	3.4	2	6.9 A 7.2 A 7.6 A 7.8 A 7.9 A 8.0 A 8.5 A 9.0 A 9.2 A 9.5 A	15 A	15 A	20 A	30 A	14	1/2 in.	N/A
			7-1/2		1		1				20 A	25 A				
3	3	7-1/2 10	10	1/2 3/4	1-1/2 2	1-1/2 2	1-1/2	3	9.6 A 9.8 A 10.0 A 11.0 A 11.5 A 12.0 A 12.2 A 13.2 A 13.8 A 14.0 A	20 A 25 A	25 A	30 A 35 A				
5	5 7-1/2	15	15	1 1-1/2 2	3	3	2 3	5	15.2 A 16.0 A 17.0 A 17.5 A 19.6 A 20.0 A 21.0 A 22.0 A 24.0 A 25.0 A	30 A 35 A 40 A 45 A	35 A 40 A 45 A 50 A	40 A 45 A 50 A 60 A		12	1/2 in.	N/A
7-1/2 10	10	20 25	25 30	3	5	7-1/2	5	7-1/2 10	25.3 A 27.0 A 28.0 A 29.0 A 32.0 A 32.2 A 34.0 A 38.0 A 40.0 A 41.0 A	50 A 60 A 80 A	60 A 70 A 80 A	70 A 80 A 90 A 100 A	60 A	10 8	1/2 in. 1/2 in.▲	N/A N/A
15	15 20	40	50	5	7-1/2 10	10	7-1/2	15	42.0 A 46.0 A 48.3 A 50.0 A 52.0 A 54.0 A 55.0 A 56.0 A 57.5 A 58.0 A	90 A	110 A 125 A	110 A 125 A 150 A		6 4	3/4 in. 1 in.	1 in. 1 in.
20 25 30	25 30	50 60	60 75	7-1/2			10	20 25	62.0 A 62.1 A 65.0 A 68.0 A 72.0 A 76.0 A 77.0 A 78.2 A 80.0 A 89.0 A 92.0 A	100 A 110 A 125 A 110 A 125 A	150 A 175 A 200 A	175 A 200 A 225 A	100 A	3	1 in.	1-1/4 in.
40	40 50	75 100	100 125	10				30 40	96.0 A 99.0 A 100.0 A 104.0 A 106.0 A 120.0 A 124.0 A 125.0 A 130.0 A 140.0 A	150 A 175 A 200 A	200 A 225 A 250 A 250 A 300 A	250 A 300 A 350 A 400 A	200 A	2 1 1/0 2/0 3/0	1 in. 1-1/4 in. 1-1/4 in. 1-1/2 in. 1-1/2 in.	1-1/4 in. 1-1/2 in. 1-1/2 in. 1-1/2 in. 2 in.
50 60 75	60 75	125 150 200	150 200					50	144.0 A 150.0 A 154.0 A 156.0 A 173.0 A 177.0 A 180.0 A 192.0 A 221.0 A 240.0 A	225 A 250 A 300 A	350 A 400 A 450 A	500 A 600 A	400 A	4/0 250 300	2 in. 2 in. 2 in.	2 in. 2 in. 2-1/2 in.
100 125	100 125 150	250 300	250 300 350						242.0 A 248.0 A 285.0 A 289.0 A 302.0 A 312.0 A 336.0 A 359.0 A 360.0 A 361.0 A	350 A 400 A 450 A 500 A 600 A	500 A 600 A 700 A	700 A 800 A 900 A 1000 A	600 A	350 500 (2) 3/0 (2) 4/0	2-1/2 in. 3 in. (2) 2-1/2 in. (2) 2 in.	2-1/2 in. 3 in. (2) 2 in. (2) 2 in.
150 200	250	350 200 500	400 400	500					382.0 A 414.0 A 472.0 A 477.0 A 480.0 A 552.0 A 590.0 A 602.0 A	600 A 800 A 900 A	800 A 900 A 1000 A 1200 A	1000 A 1200 A 1600 A	600 A —	(2)300 (2) 350 (3) 300	(2) 2 in. (2) 2-1/2 in. (3) 2 in.	(2) 2-1/2 in. (2) 2-1/2 in. (3) 2-1/2 in.

▲ 8 XHHW requires 3/4 in. conduit for 3W.

■ 200 V motors are commonly used on 208 V services.

♦ Ordinary service for normal starting duty only, acceleration time of 10 sec. or less.

★ Heavy service is jogging or plugging duty or cycling load with over 25 starts per hour or over 5 starts per minute. Energy efficient motors are polyphase motors defined in NEMA Standard MG1 and exhibit high starting current.

▼ NEC 430.22 for Single Motor, Smaller conductors may be permitted for light duty-cycle service per 430.22 (B) Exception No. 1. DC motors operating from rectified 1Ø power supply will require larger conductors per 430.22 (A) Exception No. 1. For motor-generator arc welders, see 630.11.

△ Motor full load currents thru 200 hp are taken from NEC Tables 430.147, 148 and 150. Above 200 hp from UL 98. Select wire size, circuit breakers, or fuses on basis of hp rather than nameplate full load current per NEC 430.6. **Do not use these values to select overload relay thermal units.** See Digest pages 16-129—16-152 for selection of thermal units when actual full load current is not known. Voltages listed are rated motor voltages. Corresponding nominal system voltages are 110–120 V, 200–208 V, 220–240 V, 440–480 V and 550–600 V.

□ Switch size only is shown in table. Selected fuses should not exceed maximum percent of full-load current as given in NEC Table 430.52. Above 50 hp dc switches are not hp rated by UL as Motor Circuit Switches, but as General Use Switches only and are not necessarily capable of interrupting the max. operating overload current of a motor. See NEC 100 for definition of General Use Switch. When protecting a 3Ø, Design E energy efficient motor, the switch is required by NEC 430.109 to have a hp rating of not less than 1.4 times that of a motor rated 3–100 hp, or not less than 1.3 times that of a motor rated over 100 hp. Switches shown in this table do not necessarily comply with that requirement.

◊ Thermal-magnetic circuit breaker ampere ratings recommended are approximate for average conditions, based on trip characteristics of Square D circuit breakers and NEC Table 430.52. Under some conditions, the next size larger switch or circuit breaker rating may be necessary to accommodate the motor starting current and is permitted by NEC 430.52(C)(1) Exception 2. High starting currents are anticipated with Design E and other energy efficient motors. For explanation of Code letter markings, see NEC 430.7(B). For Busway Plug-in units, see page 9-7.

☆ Thermal-magnetic breaker ampere ratings recommended are approximate for average conditions and based on trip characteristics of Square D circuit breakers and NEC Tables 430.7(B) and 430.52.

▽ Type LC, LI, LX, LXI, and LE circuit breakers are NOT recommended for use on single motor branch circuits.

Contact your local Field Office for circuit breaker selection on constant horsepower multi-speed motors.

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J-Frame Switch L-Frame Switch

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 7.69: H-Frame, J-Frame, and L-Frame PowerPact™ Automatic Molded Case Switches, 600 Vac

Circuit Breaker	Poles	Ampere Rating	G Withstand			L Withstand			R Withstand			Terminal	Wire Range
			Cat. No.	$ Price	Trip Point	Cat. No.	$ Price	Trip Point	Cat. No.	$ Price	Trip Point		
New! H-Frame J-Frame	2	150 A	HGL26000S15▲	**1349.00**	2250A	HLL26000S15	**1590.00**	2250 A	—	—	—	AL150HD	14 AWG–3/0 AWG Al/Cu
		175 A	JGL26000S17	**1827.00**	3125 A	JLL26000S17	**1980.00**	3125 A	—	—	—	AL175JD	4–4/0 AWG Al/Cu
		250 A	JGL26000S25	**1827.00**	3125 A	JLL26000S25	**1980.00**	3125 A	—	—	—	AL250JD	3/0 AWG–350 kcmil Al/Cu
	3	150 A	HGL36000S15	**1799.00**	2250 A	HLL36000S15	**1988.00**	2250 A	—	—	—	AL150HD	14 AWG–3/0 AWG Al/Cu
		175 A	JGL36000S17	**2286.00**	3125 A	JLL36000S17	**2475.00**	3125 A	JRL36000S17	**2673.00**	3125 A	AL175JD	4–4/0 AWG Al/Cu
		250 A	JGL36000S25	**2286.00**	3125 A	JLL36000S25	**2475.00**	3125 A	JRL36000S25	**2673.00**	3125 A	AL250JD	3/0 AWG–350 kcmil Al/Cu
L-Frame	3	400 A	LGL36000S40X	**4572.00**	4800 A	LLL36000S40X	**4972.00**	4800 A	LRL36000S40X	**5370.00**	4800 A	AL150HD	AL600LS52K3 (2) 2/0 AWG–500 kcmil Al/Cu
		600 A	LGL36000S60X	**5065.00**	6600A	LLL36000S60X	**5465.00**	6600 A	LRL36000S60X	**5902.00**	6600 A	AL250JD	
	4	400 A	LGL46000S40X	**5972.00**	4800 A	LLL46000S40X	**6372.00**	4800 A	LRL46000S40X	**6882.00**	4800 A	AL150HD	AL600LS52K4 (2) 2/0 AWG–500 kcmil Al/Cu
		600 A	LGL46000S60X	**6465.00**	6600A	LLL46000S60X	**6865.00**	6600 A	LRL46000S60X	**7414.00**	6600 A	AL250JD	

▲ True 2P device. Others are a 2P in a 3P module.

Table 7.70: Q-Frame (240 Vac) PowerPact™ Automatic Molded Case Switches

Circuit Breaker	Poles	Ampere Rating	J Withstand			Wire Range
			Cat. No.	$ Price	Trip Point	
Q-Frame■	2	225 A	QBL22000S22♦	**440.00**	4500 A	4 AWG–300 kcmil
	3	225 A	QBL32000S22♦	**1193.00**	4500 A	

■ Withstand rating of 10 kA at 240 Vac.
♦ DE2A discount schedule.

Table 7.71: P-Frame and R-Frame PowerPact™ Automatic Molded Case Switches▼, 600 Vac

Frame	Poles	Ampere Rating	J Withstand			K Withstand			L Withstand			Terminal	Wire Range
			Cat. No.	$ Price	Trip Point	Cat. No.	$ Price	Trip Point	Cat. No.	$ Price	Trip Point		
P	2	600 A	PJL26000S60	**5340.00**	10 kA	PKL26000S60	**5340.00**	24 kA	PLL24000S60★	**5715.00**	10 kA	AL800M23K	(3) 3/0 AWG–500 kcmil Al or Cu
		800 A	PJL26000S80	**5991.00**	10 kA	PKL26000S80	**5991.00**	24 kA	PLL24000S80★	**6414.00**	10 kA		
		1000 A	PJL26000S10	**7469.00**	10 kA	PKL26000S10	**7469.00**	24 kA	PLL24000S10★	**7995.00**	10 kA	AL1200P25K	(4) 3/0 AWG–500 kcmil Al or Cu
		1200 A	PJL26000S12	**11744.00**	10 kA	PKL26000S12	**11744.00**	24 kA	PLL24000S12★	**10887.00**	10 kA		
	3	600 A	PJL36000S60	**6584.00**	10 kA	PKL36000S60	**6584.00**	24 kA	PLL34000S60★	**6974.00**	10 kA	AL800M23K	(3) 3/0 AWG–500 kcmil Al or Cu
		800 A	PJL36000S80	**7236.00**	10 kA	PKL36000S80	**7236.00**	24 kA	PLL34000S80★	**7667.00**	10 kA		
		1000 A	PJL36000S10	**9287.00**	10 kA	PKL36000S10	**9287.00**	24 kA	PLL34000S10★	**9837.00**	10 kA	AL1200P25K	(4) 3/0 AWG–500 kcmil Al or Cu
		1200 A	PJL36000S12	**11867.00**	10 kA	PKL36000S12	**11867.00**	24 kA	PLL34000S12★	**12570.00**	10 kA		
R	2	1200 A	—	—	—	RKF26000S12	**12213.00**	57 kA	RLF26000S12	**12855.00**	48 kA	R-frame circuit breakers can be bus-connected or cable-connected. For cable connections, RLTB kit or equivalent bus structure is required. Kit is included with 3000 A switches. For all others, see page 7-44.	
		1600 A	—	—	—	RKF26000S16	**14685.00**	57 kA	RLF26000S16	**14825.00**	48 kA		
		2000 A	—	—	—	RKF26000S20	**15687.00**	57 kA	RLF26000S20	**15837.00**	48 kA		
		2500 A	—	—	—	RKF26000S25	**24948.00**	57 kA	RLF26000S25	**25185.00**	48 kA		
	3	1200 A	—	—	—	RKF36000S12	**13602.00**	57 kA	RLF36000S12	**14318.00**	48 kA		
		1600 A	—	—	—	RKF36000S16	**15911.00**	57 kA	RLF36000S16	**16062.00**	48 kA		
		2000 A	—	—	—	RKF36000S20	**19374.00**	57 kA	RLF36000S20	**19559.00**	48 kA		
		2500 A	—	—	—	RKF36000S25	**30836.00**	57 kA	RLF36000S25	**31130.00**	48 kA		
		3000 A	—	—	—	RKF36000S30	**41104.00**	57 kA	RLF36000S30	**41496.00**	48 kA		

★ P-frame L-interrupting is available in 480 Vac only.
▼ UL magnetic trip tolerances are -20% / +30% from the nominal values shown.

Table 7.72: H-, J-, L- P-, and R-Frame Withstand Ratings△

Voltage	Withstand				
	G	J	K	L	R
240 Vac	65 kA	100 kA	65 kA	125 kA	200 kA
480 Vac	35 kA	65 kA	50 kA□	100 kA	200 kA
600 Vac	18 kA	25 kA	50 kA□	50 kA	100 kA

△ The withstand rating is the fault current at rated voltage that the molded case switch will withstand without damage when protected by a circuit breaker with an equal continuous current rating.
□ R-frame withstand is 65 kA.

Accessories . . . . . Page 7-39 and Supplemental Digest Pages 3-24–3-31
Optional Lugs . . . . . Page 7-42 and Supplemental Digest Pages 3-29–3-30
Dimensions. . . . . Pages 7-54 and 7-55
Enclosures . . . . . Pages 7-56–7-58

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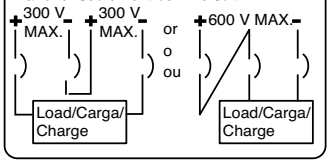
CAUTION/PRECAUCION/ATTENTION

Connect only as shown/Conectar solo asi/
Francher seulement comme suit:

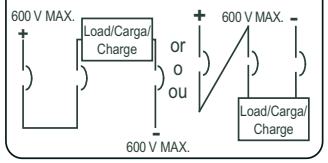


Source = 600 Vdc max. (floating)
500 Vdc max. (loaded)

DC Circuit Breaker Label

CAUTION/PRECAUCION/ATTENTION

Connect only as shown/Conectar solo asi/
Brancher seulement comme suit:



Source = 600 Vdc max. (floating)
500 Vdc max. (loaded)

MHL–DCH Breaker Only

The UL Listed thermal-magnetic molded case circuit breakers shown below are specifically designed for use on ungrounded dc systems having a maximum short-circuit voltage of 500 Vdc or a maximum floating (unloaded) voltage of 600 Vdc. The circuit breakers are suitable for use only with UPS (uninterruptable power supplies) and ungrounded systems.

This two-level voltage rating allows these circuit breakers to be applied to battery sources having a short-circuit availability of 20,000 amperes for LH, and MH circuit breakers and 25,000 amperes for PAF circuit breakers at 500 Vdc.

LH and MH circuit breakers are provided with an adjustable magnetic trip that is readily accessible by means of a single adjustment on the face of the circuit breaker. PAF circuit breakers have a fixed magnetic trip range.

These circuit breakers are UL Listed for the interrupting ratings shown only if applied with three poles connected in series (series connection is external to circuit breaker). See diagram below.

NOTE: *Due to external series connection, I-Line™ circuit breakers are not available for this application.*

Table 7.73: DC Molded Case Circuit Breakers

Ampere Rating	Circuit Breaker Cat. No.	Adjustable Magnetic Trip Range—DC Amperes▲		Interrupting Rating @ 500 Vdc	$ Price
		Low	High		
100 A	JGL37100D81	400	600	20 k AIR	**3779.00**
125 A	JGL37125D81	400	600		**3779.00**
150 A	JGL37150D81	400	600		**3779.00**
175 A	JGL37175D81	400	600		**3779.00**
200 A	JGL37200D82	500	850	20 k AIR	**3779.00**
225 A	JGL37225D82	500	850		**3779.00**
250 A	JGL37250D82	500	850		**5001.00**
250 A	LHL3625025DC	625	1250	20 k AIR	**7598.00**
300 A	LHL3630026DC	750	1500		**7598.00**
350 A	LHL3635029DC	875	1750		**7598.00**
400 A	LHL3640030DC	1000	2000		**7598.00**
450 A	MHL3645031DC	1125	2250	20 k AIR	**9456.00**
500 A	MHL3650032DC	1250	2500		**9456.00**
600 A	MHL3660033DC	1500	3000		**9456.00**
700 A	MHL3670035DC	1750	3500		**11882.00**
800 A	MHL3680036DC	2000	4000		**11882.00**
900 A	MHL3690039DC	2500	5000		**14078.00**
1000 A	MHL36100040DC	2500	5000		**14078.00**
1200 A	MHL36120040DC■	2500	5000	25 k AIR	**16758.00**
450 A	MHL3645031DCH	1125	2250	50 k AIR	**12506.00**
500 A	MHL3650032DCH	1250	2500		**12506.00**
600 A	MHL3660033DCH	1500	3000		**12506.00**
700 A	MHL3670035DCH	1750	3500		**14932.00**
800 A	MHL3680036DCH	2000	4000		**14932.00**
900 A	MHL3690039DCH	2500	5000		**17128.00**
1000 A	MHL36100040DCH	2500	5000		**17128.00**
1200 A	MHL36120040DCH■	2500	5000	50 k AIR	**19808.00**

▲ Magnetic trip tolerances are -20%/+30% from the nominal values shown.
■ Suitable for use only in a ventilated enclosure. Minimum enclosure dimensions are 38" h x 20" w x 7" d with a minimum of 300 square inches of ventilation near the top and bottom of the enclosure.

Ampere Rating	Circuit Breaker Cat. No.	Fixed Magnetic Trip Range—DC Amperes▲		Interrupting Rating @ 500 Vdc	$ Price
		Hold	Trip		
1200 A	PAF361200DC	1200	1620	25 k AIR	**24726.00**
1600 A	PAF361600DC	1600	2160		**24726.00**
2000 A	PAF362000DC	2000	2700		**24726.00**
2500 A	PCF362500DC	2500	3375	25 k AIR	**39365.00**

Accessories . . . . . Page 7-39 and Supplemental Digest Pages 3-24–3-31
Optional Lugs . . . . . Page 7-42 and Supplemental Digest Page 3-29
Dimensions . . . . . Page 7-55 and Supplemental Digest Page 3-33
Enclosures. . . . . Pages 7-56–7-58

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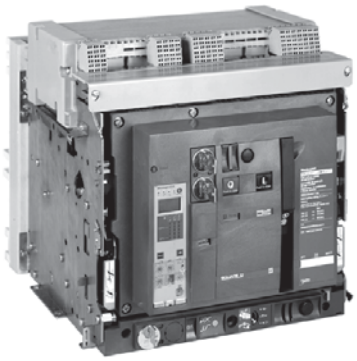

Masterpact NW DC Circuit Breaker

Table 7.74: Masterpact NW DC Circuit Breakers

Ampere Rating	Circuit Breaker Cat. No.	Interrupting Rating 500 Vdc (max 600 Vdc unloaded)	$ Price Fixed Circuit Breaker		$ Price Drawout Circuit Breaker		$ Price Cradle	
			Version C	Version C1	Version C	Version C1	Version C	Version C1
800 A	NW08NDC	35 kA	**42214.00**	**42746.00**	**39824.00**	**40888.00**	**11778.00**	**12842.00**
1200 A	NW12NDC	35 kA	**42214.00**	**42746.00**	**39824.00**	**40888.00**	**11778.00**	**12842.00**
1600 A	NW16NDC	35 kA	**42214.00**	**42746.00**	**39824.00**	**40888.00**	**11778.00**	**12842.00**
2000A	NW20NDC	35 kA	**42214.00**	**42746.00**	**39824.00**	**40888.00**	**11778.00**	**12842.00**
2500 A	NW25NDC	35 kA	**56158.00**	**56690.00**	**56662.00**	**57726.00**	**11778.00**	**12842.00**
3000 A	NW30NDC	35 kA	**70100.00**	**70632.00**	**73500.00**	**74564.00**	**11778.00**	**12842.00**
4000 A	NW40NDC	35 kA	**84044.00**	**84576.00**	**90338.00**	**90142.00**	**11778.00**	**12842.00**
800 A	NW08HDC	85 kA	**46858.00**	**47448.00**	**44205.00**	**45386.00**	**11778.00**	**12842.00**
1200 A	NW12HDC	85 kA	**46858.00**	**47448.00**	**44205.00**	**45386.00**	**11778.00**	**12842.00**
1600 A	NW16HDC	85 kA	**46858.00**	**47448.00**	**44205.00**	**45386.00**	**11778.00**	**12842.00**
2000A	NW20HDC	85 kA	**46858.00**	**47448.00**	**44205.00**	**45386.00**	**11778.00**	**12842.00**
2500 A	NW25HDC	85 kA	**62335.00**	**62926.00**	**64076.00**	**64076.00**	**11778.00**	**12842.00**
3000 A	NW30HDC	85 kA	**77811.00**	**78402.00**	**81585.00**	**82766.00**	**11778.00**	**12842.00**
4000 A	NW40HDC	85 kA	**93289.00**	**93879.00**	**100275.00**	**100058.00**	**11778.00**	**12842.00**

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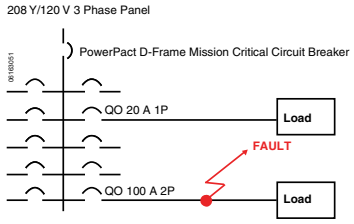

Designed for selectively coordinated systems, mission critical circuit breakers maximize continuity of the electrical service by allowing the branch circuit breaker to clear the fault.

Mission critical circuit breakers are engineered with technology that optimizes current, time and energy selectivity so the fault is cleared by the circuit breaker immediately upstream of the occurrence. This technology (see figure below) allows the remaining areas of the electrical system to continue operation without disruption. In addition to unique design attributes, Square D mission critical circuit breakers have also undergone rigorous testing procedures to certify the coordination with downstream circuit breakers—combining innovative engineering with validated test results.

Apply Square D mission critical circuit breakers in emergency power distribution systems, data centers, hospitals or anywhere continuity of service is desired.

The PowerPact™ J- and L-Frame Mission Critical circuit breakers deliver high levels of selective coordination in a flexible design that can be easily configured for a variety of applications. Tested to be selectively coordinated with the QO™ family of miniature circuit breakers and the ED, EG, and EJ circuit breakers, this solution provides peace of mind when power availability is critical.

An electronic trip unit provides adjustable long-time settings in four sensor sizes, allowing coverage from 70 A through 600 A on a 120–240, 208Y/120, 240, 480Y/277, and 480 V systems.

Table 7.75: PowerPact J- and L-Frame Mission Critical Circuit Breakers

Ratings	Available Configurations
UL 489 Listed CSA Certified Voltage: 480 V	I-Line mounting Main circuit breaker in NQ and NF panelboards Unit mount for OEM users Plug-in base for OEM users Drawout base ofr OEM users

Table 7.76: J-Frame 250 A Electronic Trip Mission Critical Circuit Breakers (480/277 Vac) with Factory Sealed Trip Units Suitable for Reverse Connection▲

Electronic Trip Unit Type	Trip Function	Trip Unit	Continuous Current	D Interrupting		G Interrupting		J Interrupting		L Interrupting		Terminal
				Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	
Standard	LI	3.2 W	250	JDL34250WU31X	3489.	JGL34250WU31X	4727.	JJL34250WU31X	6678.	JLL34250WU31X	8629.	AL250JD■
Standard	LSI	3.2S-W	250	JDL34250WU33X	3801.	JGL34250WU33X	5039.	JJL34250WU33X	6989.	JLL34250WU33X	8941.	AL250JD■
High Perf. Ammerter	LSI	5.2A-W	250	JDL34250WU43X	4809.	JGL34250WU43X	6046.	JJL34250WU43X	7997.	JLL34250WU43X	9949.	AL250JD■
High Perf. Energy	LSI	5.2E-W	250	JDL34250WU53X	5414.	JGL34250WU53X	6652.	JJL34250WU53X	8602.	JLL34250WU53X	10554.	AL250JD■
High Perf. Ammerter	LSIG	6.2A-W	250	JDL34250WU44X	6018.	JGL34250WU44X	7256.	JJL34250WU44X	9206.	JLL34250WU44X	11158.	AL250JD■
High Perf. Energy	LSIG	6.2E-W	250	JDL34250WU54X	6623.	JGL34250WU54X	7861.	JJL34250WU54X	9812.	JLL34250WU54X	11763.	AL250JD■

▲ Standard rated (80%). Not available in 100% rated.
■ AL250JD terminal wire range is (1) 3/0 AWG–350 kcmil Al or Cu.

Table 7.77: L-Frame 600 A Electronic Trip Mission Critical Circuit Breakers (480/277 Vac) with Factory Sealed Trip Units Suitable for Reverse Connection▲

Electronic Trip Unit Type	Trip Function	Trip Unit	Continuous Current	D Interrupting		G Interrupting		J Interrupting		L Interrupting		Terminal
				Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price	
480/277 Vac, 50/60 Hz, 3P												
Standard	LI	3.3 W	250	LDL34250WU31X	5696.	LGL34250WU31X	5996.	LJL34250WU31X	10004.	LLL34250WU31X	11703.	AL400L61K3■
			400 600	LDL34400WU31X LDL34600WU31X	5696. 8389.	LGL34400WU31X LGL34600WU31X	5996. 8831.	LJL34400WU31X LJL34600WU31X	10004. 12438.	LLL34400WU31X LLL34300WU31X	11703. 13968.	AL600LS52K3♦
Standard	LSI	3.3S-W	250	LDL34250WU33X	6361.	LGL34250WU33X	6695.	LJL34250WU33X	10704.	LLL34250WU33X	12403.	AL400L61K3■
			400 600	LDL34400WU33X LDL34600WU33X	6361. 9054.	LGL34400WU33X LGL34600WU33X	6695. 9531.	LJL34400WU33X LJL34600WU33X	10704. 13138.	LLL34400WU33X LLL34300WU33X	12403. 14667.	AL600LS52K3♦
High Perf. Ammeter	LSI	5.3A-W	400 600	LDL34400WU43X LDL34600WU43X	7379. 10071.	LGL34400WU43X LGL34600WU43X	7767. 10601.	LJL34400WU43X LJL34600WU43X	11775. 14208.	LLL34400WU43X LLL34300WU43X	13474. 15738.	AL600LS52K3♦
High Perf. Energy	LSI	5.3E-W	400 600	LDL34400WU53X LDL34600WU53X	8496. 11190.	LGL34400WU53X LGL34600WU53X	8943. 11779.	LJL34400WU53X LJL34600WU53X	12952. 15386.	LLL34400WU53X LLL34300WU53X	14651. 16915.	AL600LS52K3♦
High Perf. Ammeter	LSIG	6.3A-W	400 600	LDL34400WU44X LDL34600WU44X	9616. 12309.	LGL34400WU44X LGL34600WU44X	10122. 12956.	LJL34400WU44X LJL34600WU44X	14131. 16844.	LLL34400WU44X LLL34300WU44X	15830. 18093.	AL600LS52K3♦
High Perf. Energy	LSIG	6.3E-W	400 600	LDL34400WU54X LDL34600WU54X	10734. 13427.	LGL34400WU54X LGL34600WU54X	11299. 14134.	LJL34400WU54X LJL34600WU54X	15307. 17741.	LLL34400WU54X LLL34300WU54X	17006. 19271.	AL600LS52K3♦
480/277 Vac, 50/60 Hz, 4P												
Standard	LI	3.3 W	250	LDL44250WU31X	6196.	LGL44250WU31X	6496.	LJL44250WU31X	10504.	LLL44250WU31X	12203.	AL400L61K4■
			400 600	LDL44400WU31X LDL44600WU31X	7096. 9789.	LGL44400WU31X LGL44600WU31X	7396. 10231.	LJL44400WU31X LJL44600WU31X	11404. 13838.	LLL44400WU31X LLL44300WU31X	13103. 15368.	AL600LS52K4♦
Standard	LSI	3.3S-W	250	LDL44250WU33X	6861.	LGL44250WU33X	7195.	LJL44250WU33X	11204.	LLL44250WU33X	12903.	AL400L61K4■
			400 600	LDL44400WU33X LDL44600WU33X	7761. 10454.	LGL44400WU33X LGL44600WU33X	8095. 10931.	LJL44400WU33X LJL44600WU33X	12104. 14538.	LLL44400WU33X LLL44300WU33X	13803. 16067.	AL600LS52K4♦
High Perf. Ammeter	LSI	5.3A-W	400 600	LDL44400WU43X LDL44600WU43X	8779. 11471.	LGL44400WU43X LGL44600WU43X	9167. 12001.	LJL44400WU43X LJL44600WU43X	13175. 15608.	LLL44400WU43X LLL44300WU43X	14874. 17138.	AL600LS52K4♦
High Perf. Energy	LSI	5.3E-W	400 600	LDL44400WU53X LDL44600WU53X	9896. 12590.	LGL44400WU53X LGL44600WU53X	10343. 13179.	LJL44400WU53X LJL44600WU53X	14352. 16786.	LLL44400WU53X LLL44300WU53X	16051. 18315.	AL600LS52K4♦
High Perf. Ammeter	LSIG	6.3A-W	400 600	LDL44400WU44X LDL44600WU44X	11016. 13709.	LGL44400WU44X LGL44600WU44X	11522. 14356.	LJL44400WU44X LJL44600WU44X	15531. 18244.	LLL44400WU44X LLL44300WU44X	17230. 19493.	AL600LS52K4♦
High Perf. Energy	LSIG	6.3E-W	400 600	LDL44400WU54X LDL44600WU54X	12134. 14827.	LGL44400WU54X LGL44600WU54X	12699. 15534.	LJL44400WU54X LJL44600WU54X	16707. 19141.	LLL44400WU54X LLL44300WU54X	18406. 20671.	AL600LS52K4♦

▲ Standard rated (80%). Not available in 100% rated.
■ AL400L61K3 terminal wire ranges are (1) #2 AWG–500 kcmil Al or (1) #2 AWG–600 kcmil Cu.
♦ AL600LS52K3 terminal wire ranges are (2) 2/0 AWG–500 kcmil Al or Cu.

Table 7.78: J-Frame Termination Options

Termination Letter
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.

H G L 3 6 1 0 0
└Termination Letter


Plug-in


Drawout


Rear Connected

▲ Add TS suffix for circuit breaker without terminal nut kit.
■ For N and D pricing, add termination pricing on page 7-45 to price. For S pricing, add termination pricing on page 7-41 to price.

Table 7.79: 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

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LA Mission Critical Circuit Breakers

The LA High Magnetic Withstand MC Circuit Breakers are designed to trip at a higher magnetic trip level (18–20 times handle rating) than typical molded case circuit breakers (MCCBs) (which trip at 5–10 times the handle rating).

The high magnetic withstand value of these LA circuit breakers allow the downstream branch circuit breaker to clear the fault.

Table 7.80: L-Frame—400 A, Thermal-Magnetic, High Magnetic Withstand Circuit Breakers For Mission Critical Loads

Ampere Rating	AC Magnetic Level Factory Set		Standard Interrupting		High Interrupting		Terminal	
	Hold	Trip	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	Wire Range
LA/LH MC Circuit Breaker, 3P, 480 Vac								
200 A	3400 A	4000 A	LAL34200MC	**4962.00**	LHL34200MC	**7941.00**	AL250LAMC	(1) 250–350 kcmil Al (1) 3/0 AWG–350 kcmil Cu
225 A	3825 A	4500 A	LAL34225MC	**4962.00**	LHL34225MC	**7941.00**		
250 A	4250 A	5000 A	LAL34250MC	**5355.00**	LHL34250MC	**8336.00**		
400 A	6000 A	7200 A	LAL34400MC	**6615.00**	LHL34400MC	**9596.00**	AL400LA	(1) 1 AWG–600 kcmil Al or (2) 1 AWG–250 kcmil Al

Table 7.81: L-Frame Interrupting Table

	LAL	LHL
240 Vac	42 kA	65 kA
480 Vac	30 kA	35 kA

PowerPact™ Circuit Breakers with Micrologic™ Electronic Trip Units

The advantages of being able to adjust the trip curve of a circuit breaker equipped with an electronic trip system are obvious. There are other advantages, such as being able to adjust or turn off the instantaneous trip function on some circuit beakers and models of trip units.

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Table 7.82: Electrical Accessories

New!

Accessory	Description		Rated Voltage		H-, J-, and L-Frame: Factory-Installed Cat. Suffix	H- and J-Frame: Field-Installable Cat. No.	H- and J-Frame: $ Price	L-Frame: Field-Installable Cat. No.	L-Frame: $ Price	M-, P-, and R-Frame: Factory Installed Cat. Suffix	M-, P-, and R-Frame: Field-Installable Cat. No.	M-, P-, and R-Frame: $ Price
Auxiliary and Alarm Switches (OF, SD, SDE)  H-, J-, L-, M-, P, and R-Frame	Provides circuit breaker contact status. Note: The location of the accessory in the circuit breaker determines its function.	Standard Min Load = 10mA with 24V	1 auxiliary switch (OF) 1a1b		AA	S29450	**297.00**	S29450	**297.00**	AA	S29450	**297.00**
			2 auxiliary switch (OF) 2a2b		AB	2x S29450	**594.00**	2x S29450	**594.00**	AB	2x S29450	**594.00**
			3 auxiliary switch (OF) 3a3b		AC	—	—	3x S29450	**891.00**	AC	3x S29450	**891.00**
			Alarm Switch (SD) 1a1b		BC	S29450	**297.00**	S29450	**297.00**	BC	S29450	**297.00**
			Overcurrent trip switch (SDE) 1a1b		BD	—	**338.00**	S29450	**297.00**	BD	S29450	**297.00**
			Consisting of:	OF Switch	—	S29450	**297.00**	—	—	—	—	—
				SDE Adapter	—	S29451	**40.00**	—	—	—	—	—
			Alarm switch and Overcurrent trip switch		BE	—	**635.00**	2x S29450	**594.00**	BE	2x S29450	**594.00**
			Consisting of:	OF Switch	—	2x S29450	**594.00**	—	—	—	—	—
				SDE Adapter	—	S29451	**40.00**	—	—	—	—	—
			Auxiliary Switch/Alarm Switch/Adapter (OF/SD/SDE) Kit		—	—	—	—	—	—	S33801♦	**297.00**
		Low Level Min Load = 1mA with 24V	One auxiliary switch (OF) 1a1b		AE	S29452	**372.00**	S29452	**372.00**	AE	S29452	**372.00**
			Two auxiliary switches (OF) 2a2b		AF	2x S29452	**744.00**	2x S29452	**744.00**	AF	2x S29452	**744.00**
			3 auxiliary switches (OF) 3a3b		AG	—	—	3x S29452	**1116.00**	AG	3x S29452	**1116.00**
			Alarm Switch (SD) 1a1b		BH	S29452	**372.00**	S29452	**372.00**	BH	S29452	**372.00**
			Overcurrent trip switch (SDE) 1a1b		BJ	—	**413.00**	S29452	**372.00**	BJ ▼	S29452	**372.00**
			Consisting of:	OF Switch	—	S29452	**372.00**	—	—	—	—	—
				SDE Adapter	—	S29451	**40.00**	—	—	—	—	—
			Alarm switch and Overcurrent trip switch		BK	—	**785.00**	2x S29452	**744.00**	BK▼	2x S29452	**744.00**
			Consisting of:	OF Switch	—	2x S29452	**744.00**	—	—	—	—	—
				SDE Adapter★	—	S29451	**40.00**	—	—	—	—	—
Shunt Trip (MX)  H-, J-, and L-Frame	Trips the circuit breaker from a remote location by means of a trip coil energized from a separate supply voltage circuit.		AC	24	SK	S29384		S29384		SK	S33659	
				48	SL	S29385		S29385		SL	S33660	
				110–130	SA	S29386		S29386		SA	S33661	
				220–240	—	—	**717.00**	—	**717.00**	SC	S33662	**755.00**
				208–277	SD	S29387		S29387		SD	S33663	
				380–480	SH	S29388		S29388		SH	S33664	
				525–600	SJ	S29389		S29389		—	—	
			DC	12	SN	S29382		S29382		SN	S33658	
				24	SO	S29390		S29390		SK	S33659	
				30	SU	S29391		S29391		SK	S33659	
				48	SP	S29392	**717.00**	S29392	**717.00**	SL	S33660	**755.00**
				60	SV	S29383		S29383		SL	S33660	
				125	SR	S29393		S29393		SA	S33661	
				250	SS	S29394		S29394		SC	S33662	
Undervoltage Trip (MN)  H-, J-, and L-Frame	Instantaneously opens the circuit breaker when the under-voltage trip supply voltage drops to a value between 35% and 70% of its rated voltage. Closing is allowed when the supply voltage of the undervoltage trip reaches 85% of rated voltage.		AC	24	UK	S29404		S29404		UK	S33668	
				48	UL	S29405		S29405		UL	S33669	
				110–130	UA	S29406		S29406		UA	S33670	
				220–240	—	—	**717.00**	—	**717.00**	UC	S33671	**755.00**
				208–277	UD	S29407		S29407		—	—	
				380–480	UH	S29408		S29408		UH	S33673	
				525–600	UJ	S29409		S29409		—	—	
			DC	12	UN	S29402		S29402		—	—	
				24	UO	S29410		S29410		UK	S33668	
				30	UU	S29411		S29411		UK	S33668	
				48	UP	S29412	**717.00**	S29412	**717.00**	UL	S33669	**755.00**
				60	UV	S29403		S29403		UL	S33669	
				125	UR	S29413		S29413		UA	S33670	
				250	US	S29414		S29414		UC	S33671	
Time Delay Unit 	Undervoltage trip with externally mounted adjustable time delay unit for UVR of 0.5, 0.9, 1.5, 3.0 seconds before circuit breaker trips		AC/DC	48	—	S33680		S33680		—	S33680▲■	
				100–130	—	S33681	**1140.00**	S33681	**1140.00**	—	S33681▲■	
				220–250	—	S33682		S33682		—	S33682▲■	**1140.00**
				380–480	—	—	—	—	—	—	S33683▲■	
	Undervoltage trip with externally mounted non-adjustable time delay unit of 0.25 sec before circuit breaker trips.		AC/DC	48	—	S29426	**930.00**	S29426	**930.00**	—	—	
				100–130	—	—	—	—	—	—	S33684▲■	**930.00**
				200–250	—	—	—	—	—	—	S33685▲■	
				220–240	—	S29427	**930.00**	S29427	**930.00**	—	—	

▲ Field-installable kit includes time delay module only. Order undervoltage trip separately.
■ Discount schedule DE2F.
♦ P-frame drawout circuit breaker only.
★ SDE Adapter used for H- and J-frame only.
▼ Not available on electrically operated P-frame.

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Table 7.83: Motor Operators for H-, J-, and L-Frame Circuit Breakers

Description		Rated Voltage		Factory Installed Cat. No. Suffix	Field--Installable Kit					
					H-Frame▲		J-Frame		L-Frame 600 A	
					Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
 Motor Operator	Standard motor for electrically-operated circuit breakers★	AC	48–60	ML	S29440		S31548		S432639	New!
			110–130	MA	S29433		S31540		S432640	
			208–277 220–240	MD	S29434	1161.00	S31541	3123.00	S432641	3395.00
			380–415	MF	—		—		S432642	
			440–480	MH	S29435		S31542		S432647	
		DC	24–30	MO	S29436		S31543		S432643	
			48–60	MV	S29437		S31544		S432644	
			110–130	MR	S29438	1161.00	S31545	3123.00	S432645	3545.00
			250	MS	S29439		S31546		S432646	
	Communicating motor for electrically-operated circuit breakers▼	AC	220–240	NC	S429441	1509.00	S431549	4060.00	S432652	4414.00
	Locking device	Mounting hardware		—	—	—	—	—	S32649	59.00
		Ronis lock		—	S41940	146.00	S41940	146.00	S41940	146.00
		Profalux lock		—	S42888	146.00	S42888	146.00	S42888	146.00
		Mounting hardware plus Ronis lock		—	S429449	155.00	S429449	155.00	—	—
	Operations counter			—	—	—	—	—	S32648	225.00
	Adapter for I-Line circuit breaker			—	S37420	119.00	S37420	119.00	—	—

Table 7.84: Spring-Charging Motors for Electrically-Operated P-Frame Circuit Breakers

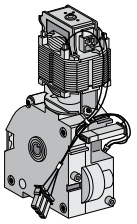
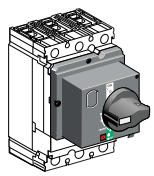
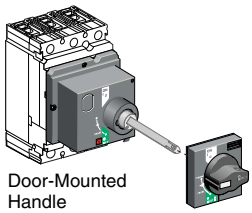
Description		Rated Voltage		Factory Installed		P-Frame (For Field-replacement Only)		Replacement Coils	
				Cat. No. Suffix	$ Price	Spring Charging Motor Cat. No.	$ Price ♦	Opening/Closing Coil Cat. No.	$ Price
 Spring-charging Motor	Standard motor for electrically-operated circuit breakers. Factory-installed includes motor and opening/closing coils.	AC	48	ML	5090.00	S47391	3580.00	S33660	755.00
			100–130	MA		S47395		S33661	
			220–240	MC		S47396		S33662	
			380–415	MF		S47398		S33664	
		DC	24–30	MO	5090.00	S47390	3580.00	S33659	755.00
			48–60	MV		S47391		S33660	
			110–130	MR		S47392		S33661	
			200–250	MS		S47393		S33662	
	Communicating motor mechanism for electrically operated circuit breakers. Factory-installed includes motor and opening/closing coils.	AC	48	NL	5090.00	S47391	3580.00	S33034	755.00
			100–130	NA		S47395		S33035	
			220–240	NC		S47396		S33036	
			380–415	NF		S47398		S33038	
		DC	24–30	NO	5090.00	S47390	3580.00	S33033	755.00
			48–60	NV		S47391		S33034	
			110–130	NR		S47392		S33035	
			200–250	NS		S47393		S33036	

Table 7.85: Rotary Operated Handles

Device		Description	H- and J-Frame▲			L-Frame			P-Frame	
			Factory Installed Cat. No. Suffix	Field Installable Cat. No.	$ Price	Factory Installed Cat. No. Suffix	Field Installable Cat. No.	$ Price	Factory Installed Cat. No. Suffix	$ Price
Direct Mounted	Standard black handle	Handle only	RD10	S29337	225.00	RD10	S32597	366.00	RD10	539.00
	Standard black handle with	Two early-break and two early make switches	—	—	—	—	—	—	RD16	822.00
		One early-break switch	RD12	S29337 + S29345	345.00	RD12	S32597 + S32605	486.00	—	—
		Two early-make switches	RD13	S29337 + S29346	404.00	RD13	S32597 + S29346	545.00	—	—
	Red handle on yellow bezel	Handle only	RD20	S29339	234.00	RD20	S32599	407.00	—	—
		One early-break switch	RD22	S29339 + S29345	354.00	RD22	S32599 + S32605	527.00	—	—
		Two early-make switches	RD23	S29339 + S29346	413.00	RD23	S32599 + S29346	586.00	—	—
	MCC conversion accessory		—	S429341	102.00	—	S32606	102.00	—	—
	CNOMO conversion accessory		—	—	—	—	S32602	102.00	—	—
Door Mounted	Standard black handle	Handle only	RE10	S29338	383.00	RE10	S32598	557.00	RE10	971.00
	Standard black handle with:	Two early-break and two early make switches	—	—	—	—	—	—	RE16	1268.00
		Two early make switches	RE13	S29338 + S29346	503.00	RE13	S32598 + S29346	736.00	—	—
	Red handle on yellow bezel	Handle only	RE20	S29340	399.00	RE20	S32600	597.00	—	—
Rotary Handle Replacement Kit			—	—	—	—	—	—	S33875	795.00
Telescoping			RT10	S29343	492.00	RT10	S32603	617.00	—	—
Accessories	Key lock adapter		—	S429344	58.00	—	S32604	58.00	—	—
	Key locks	Ronis 1351.500	—	S41940	146.00	—	S41940	146.00	—	—
		Profalux KS5 B24 D4Z	—	S42888	146.00	—	S42888	146.00	—	—
		2 Ronis keylocks with 1 key	—	S41950	185.00	—	S41950	185.00	—	—
		2 Profalux keylocks with 1 key	—	S42878	185.00	—	S42878	185.00	—	—
	Indication Auxiliary Switch	One early-break switch	—	S29445	120.00	—	S32605	120.00	—	—
		Two early-make switches	—	S29346	179.00	—	S29346	179.00	—	—


Direct-Mounted handle


Door-Mounted Handle

▲ Not available in H-frame 2P modules.
■ CP1 discount schedule.
♦ DE2F discount schedule.
★ Factory and field-installed standard motor operators for H- and J-frame circuit breakers require the SDE switch and SDE adapter (both included).
Factory and field-installed standard motor operators for L-frame circuit breakers require the SDE switch (included).
▼ Installation requires BSCM with NSX Cord. SeeTable 7.118, page 7-49 for ordering information.

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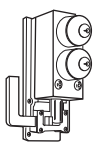
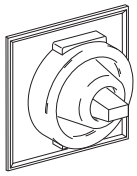
Table 7.86: Locks, Interlocking *New!*

Device	Description		H- and J-Frame			Q-Frame		L-Frame		M- and P-Frame			R-Frame		
			Factory Installed Cat. No. Suffix	Field-Installed Cat. No.	$ Price	Field-Installed Cat. No.	$ Price	Field-Installed Cat. No.	$ Price	Factory Installed Cat. No. Suffix	Field-Installed Cat. No.	$ Price	Factory Installed Cat. No. Suffix	Field-Installed Cat. No.	$ Price
Handle Padlocking Device	Removable (lock OFF only)		—	S29370	**50.00**			S29370	**50.00**	—	S44936	**50.00**	—	S33996	**50.00**
	Fixed (lock OFF or ON)		YP	S29371	**77.00**	QBPA	**77.00**	S32631	**122.00**	YP	S32631	**122.00**	YP	S32631	**122.00**
	Fixed (lock OFF only)▲		YQ	S37422	**122.00**	QBPAF	**77.00**	NJPAF	**122.00**	YQ	MPRPAF	**122.00**	YQ	MPRPAF	**122.00**
	Fixed (lock OFF only)–2P		YQ	H2PHLA	**122.00**	—	—	—	—	—	—	—	—	—	—
Interlocking (Not UL listed)	Mechanical for circuit breakers with rotary handles▲		—	S29369	**494.00**	—	—	S32621	**494.00**	—	S33890	**1220.00**	—	—	—
	Mechanical for circuit breakers with toggles▲		—	S29354	**494.00**	QBMIK	**90.00**	S32614	**494.00**	—	—	—	—	—	—
Key Locking	Provision only, vertical mount, 1 or 2 locks	Kirk	—	—	—	—	—	—	—	JA	—	**323.00**		—	
	Provisions only, vertical mounting one key interlock including padlock provision, open position only.	Kirk	—	—	—	—	—	—	—	JE■★	—	**445.00**	JE★	—	**445.00**
	Provision only, horizontal mount 1 lock, M- and P-frame 1 or 2 locks, R-frame	Kirk	—	—	—	—	—	—	—	JK	—	**323.00**	JK	—	**323.00**
		Ronis	—	—	—	—	—	—	—	JB♦	—	**323.00**	JB	—	**323.00**
		Profalux	—	—	—	—	—	—	—	JD♦	—	**323.00**	JD	—	**323.00**
	Provision and 1 lock, vertical mount	Kirk	—	—	—	—	—	—	—	JG	—	**1796.00**	—	—	—
	Provision and 1 lock, horizontal mount	Kirk	—	—	—	—	—	—	—	JL	—	**1796.00**	JL	—	**1796.00**
		Ronis	—	—	—	—	—	—	—	JC♦	—	**2285.00**	JC	—	**2285.00**
		Profalux	—	—	—	—	—	—	—	JF♦	—	**2285.00**	JF	—	**2285.00**
	Provision and 2 locks keyed alike	Kirk	—	—	—	—	—	—	—	JN	—	**2285.00**	JN	—	**2285.00**
	Provision and 2 locks keyed differently	Kirk	—	—	—	—	—	—	—	JP	—	**3269.00**	JP	—	**3269.00**

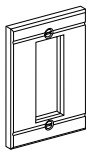


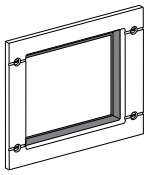
▲ Not available in M frame or HD and HG 2P modules.
■ Not available on M-frame.
♦ Not available for M, P or P frame drawout. Only available on P frame electronic.
★ Not available on I-Line.

New!



Handle Rubber Boot



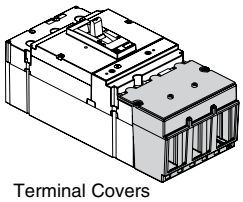


Door Escutcheon

Table 7.87: Installation Accessories fo H-, J-, and L-Frame Circuit Breakers

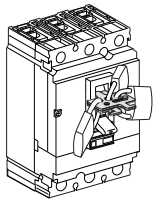
Description	H- and J-Frame		L-Frame	
	Field-Installed Cat. No.	$ Price	Field-Installed Cat. No.	$ Price
Front Panel Escutcheon for Toggle Breakers	S29315	**48.00**	32556	**55.00**
Front Panel Escutcheon for Rotary Handle, Motor Operator, or extended escutcheon	S29317	**63.00**	S32558	**74.00**
Phase Barriers (set of 6)	S29329	**53.00**	32570	**72.00**
Handle Rubber Boot▼	S29319	**135.00**	S32560	**171.00**
Sealing Accessories (for front cover screws)	S29375	**42.00**	S29375	**42.00**
DIN rail mounting kit (requires 15 mm depth on a 35 mm DIN rail)▼	S29305	**188.00**	—	—
DIN rail adapter	—	—	—	—
Handle Extensions (set of 5)	S29313	**140.00**	S432553	**165.00**

▼ Not available in HD and HG 2P modules.

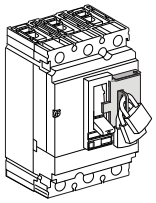


Terminal Covers

Rear Connection



Removable Padlock Attachment



Fixed Padlock Attachment

Table 7.88: Installation Accessories for M-, P-, and R-Frame Circuit Breakers

Description		Frame	Field-Installed Cat. No.	$ Price
Door Escutcheon	Accessory Cover	M-, P-Frame	S33718△	**176.00**
		R-Frame	S33929	**176.00**
	Toggle Handle	M-, P-Frame	S33717	**47.00**
	Drawout	P-Frame	S33857△	**308.00**
Terminal Covers	Short lug cover 3P	P-Frame	S33932	**165.00**
	Short lug cover 4P		S33933	**216.00**
	Long lug cover 3P		S33934	**216.00**
	Long lug cover 4P		S33935	**281.00**
Replacement Handle	Standard	R-Frame	S33997	**111.00**
	Standard Short	M-, P-Frame	S46998	**44.00**
	Long	M-, P-Frame	S46996	**44.00**

△ DE2F discount schedule.

New!

Table 7.89: Rear Connections

Device	Description	H-Frame				J-Frame				L-Frame			
		Poles	Factory-Installed Termination No.	Field-Installable Cat. No.	$ Price	Poles	Factory-Installed Termination No.	Field-Installed Cat. No.	$ Price	Poles	Factory-Installed Termination No.	Field-Installed Cat. No.	$ Price
Mixed Rear Connection Kit□		2	S	—	—	2	S	—	—	3	S	S32477	**1059.00**
		3	S	S37432	**381.00**	3	S	S37437	**381.00**	4	S	S32478	**1344.00**
Consisting of:	Short rear connections (set of 2)	2 or 3	—	2x S37433◊	**84.00**	2 or 3	—	2x S37438◊	**84.00**	3	—	2x S432475◊	**219.00**
	Long rear connections (set of 2)		—	S37434	**105.00**		—	S37439☆	**105.00**		—	2x S432476◊	**261.00**
	Short terminal cover (3P)	3	—	S37436	**119.00**	3	—	S37440	**119.00**	3	—	2x S32562◊	**149.00**
	Short terminal cover (4P)	4	—	—	—	—	—	—	—	4	—	2x S32563◊	**161.00**

□ Kit contains 4 short rear connections, 2 long rear connections (4 long rear connections for 4P), hardware, and 2 terminal covers..
◊ Price shown is for quantity one.
☆ For use with 3P circuit breakers only.

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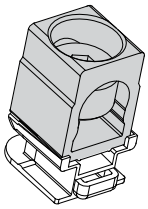


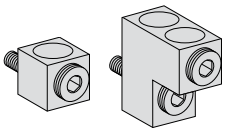
J-Frame Lug

Table 7.90: Mechanical Lug Kits for H-Frame and J-Frame Circuit Breakers▲

Description	Circuit Breaker Application			Ampere Rating	Number of Wires Per Lug and Wire Range	Kit Cat. No.	Qty Per Kit	$ Price Per Kit
	Standard	Ampere Rating	Optional					
Al Lugs for Use with Al or Cu Wire	HD, HG, HJ, HL	15–150 A			(1) 14–3/0 AWG Al or Cu	AL150HD	3	**75.00**
	JD, JG, JJ, JL	150–175 A			(1) 4-4/0 AWG Al or Cu	AL175JD	3	**113.00**
	JD, JG, JJ, JL	200–250 A	JD,JG,JJ,JL	150–175 A	(1) 3/0–350 kcmil Al or Cu	AL250JD	3	**113.00**
Cu Lugs for Use with Cu Wire Only			HD,HG,HJ,HL	15–150 A	(1) 14–2/0 AWG Cu	CU150HD	3	**156.00**
			JD,JG,JJ,JL	150–250 A	(1) 1/0–300 kcmil Cu	CU250JD	3	**314.00**
Control Wire Terminal for H-frame lug kit						S37423	2	**53.00**
Control Wire Terminal for J-frame lug kit						S37424	2	**53.00**

▲ See page 7-44 for terminal nuts/bus bar connections.

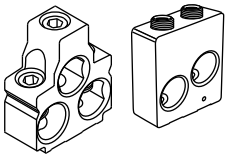
New!



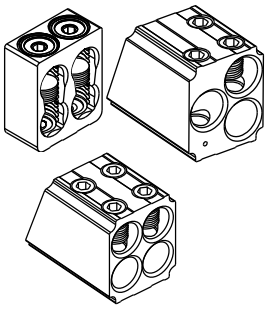
L-Frame Lugs

Table 7.91: Mechanical Lug Kits for L-Frame Circuit Breakers

Description	Circuit Breaker Application				Number of Wires Per Lug and Wire Range	Kit Cat. No.	Qty Per Kit	$ Price Per Kit
	Ampere Rating	Poles	Unit Mount	I-Line				
Al Lugs for Use with Al or Cu Wire	250	3	X	X	(1) 2 AWG–500 kcmil Al (1) 2 AWG–600 kcmil Cu	AL400L61K3	3	**143.00**
		4	X	—		AL400L61K4	4	**176.00**
	400/600	3	X	—	(2) 2/0 AWG–500 kcmil Al or Cu	AL600LS52K3	3	**341.00**
		4	X	—		AL600LS52K4	4	**449.00**
	400/600	3	X	X	(2) 3/0 AWG–500 kcmil Al or Cu	AL600LF52K3	3	**831.00**
Cu Lugs for Use with Cu Wire Only	250/400	3	X	X	(1) 2 AWG–600 kcmil Cu	CU400L61K3	3	**755.00**
		4	X	—		CU400L61K4	4	**983.00**
	400/600	3	X	—	(2) 2/0 AWG–500 kcmil Cu	CU600LS52K3	3	**1832.00**
		4	X	—		CU600LS52K4	4	**2385.00**
	400/600	3	X	X	(2) 3/0 AWG–500 kcmil Cu	CU600LF52K3	3	**2395.00**



M- and P-Frame Lugs (800 A and below)



P-Frame Lugs (Above 800 A)

Table 7.92: Mechanical Lug Kits for M-Frame, P-Frame and R-Frame Circuit Breakers▼

Description	Circuit Breaker Application				Wires per Lug and Wire Range	Cat. No.	Lugs Per Kit	$ Price Per Kit
	Standard	Rating	Optional	Ampere Rating				
Al Lugs for AL or Cu Wire	M-, P-Frame	800 A	—	800 A	(3) 3/0 AWG-500 kcmil	AL800M23K	3	**284.00**
						AL800M23K4	4	**378.00**
		1200 A	PG, PJ, PL, MG, MJ	800 A	(4) 3/0 AWG-500 kcmil	AL1200P24K■	1	**155.00**
		—	PG, PJ, PL, MG, MJ	800 A	(2) 3/0 AWG-600 kcmil	AL800P6K■	3	**416.00**
						AL800P6K4■	4	**554.00**
		—	PG, PJ, PL, MG, MJ	800 A	(2) 3/0 AWG-750 kcmil 750 kcmil: compact AL only	AL800P7K■	3	**464.00**
						AL800P7K4■	4	**602.00**
	P-Frame	1200 A	PG ,PJ, PL	800 A	(4) 3/0 AWG-500 kcmil	AL1200P25K♦	3	**378.00**
						AL1200P25K4♦	4	**504.00**
		—	PG, PJ,P L	800–1200 A	(3) 350-600 kcmil	AL1200P6KU♦	3	**786.00**
						AL1200P6KU4♦	4	**1038.00**
	PG,PJ,PL	—	PG, PJ, PL	1200 A	(3) 3/0 AWG-750 kcmil 750 kcmil: compact AL only	AL1200P7KU♦	3	**1233.00**
						AL1200P7KU4♦	4	**1635.00**
	R-Frame	1200 A	I-Line	—	(4) 3/0 AWG-600 kcmil	AL1200R53K	1	**215.00**
		2500 A	Unit Mount	—	(1) 3/0 AWG-750 kcmil	AL2500RK★	2	**132.00**
Cu Lugs for Cu Wire Only□	M-, P-Frame	—	PJ	100–150 A	(1) 1-1/0 AWG	CU250P1K△	3	**990.00**
		800 A	MG, MJ, PG, PJ, PL	—	(3) 3/0 AWG-500 kcmil	CU800M23K	3	**1647.00**
						CU800M23K4	4	**2190.00**
		1200 A	MG, MJ, PG, PJ, PL	800–1200 A	(4) 3/0 AWG-500 kcmil	CU1200P24K■	1	**569.00**
	P-Frame	1200 A	PG, PJ, PL	800–1200 A	(4) 3/0 AWG-500 kcmil	CU1200P25K♦	3	**4886.00**
						CU1200P25K4	4	**6503.00**
	R-Frame	1200 A	I-Line	—	(4) 3/0 AWG-500 kcmil	CU1200R53K	1	**548.00**

■ Does not fit onto ON end of unit-mount P-frame circuit breakers.
♦ For unit-mount circuit breaker only.
★ All unit-mount R-frame circuit breakers require terminal pads for mounting lugs of any type. See page 7-44.
▼ For lug with a tapped hole for control wire, add a "T" before the "K" in the catalog number (for example, AL800P6TK).
△ This lug can only be used on low amp PJ frame breakers where the Instantaneous setting must not be turned OFF. The cables must be laced with rope per lug instructions.
□ Not available with tapped hole for control wire.

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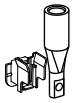
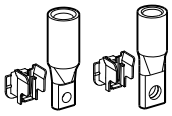




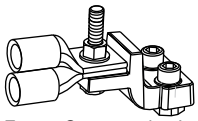
J-Frame Compression Lugs

Table 7.93: Compression Lug Kits for PowerPact™ Circuit Breakers

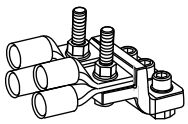
Description	Circuit Breaker Type	Ampere Rating	System Range	Mounting Type	Dimension A (in)	Max. Lugs per Terminal	Cat. No.	Qty. Per Kit	$ Price Per Kit
Compression Lug Kits for H-Frame and J-Frame Circuit Breakers									
Aluminum Compression Lug Kits	H-frame	60 A	6–2 AWG Al or Cu	Unit/I-line♦	1.2	1	YA060HD	3	**194.00**
		150 A	1/0–4/0 AWG Al or Cu		2.5	1	YA150HD	3	**294.00**
	J-frame	150 A	1–3/0 AWG Al or Cu		1.2	1	YA150JD	3	**237.00**
		250 A	3/0–350 kcmil Al or Cu		2.5	1	YA250J35	3	**305.00**
Copper Compression Lug Kits	H-frame	60 A	6–1/0 AWG Cu		1.0	1	CYA060HD	3	**194.00**
		150 A	4–2/0 AWG Cu		1.2	1	CYA150HD	3	**194.00**
	J-frame	150 A	6–1/0 AWG Cu		0.7	1	CYA150JD	3	**194.00**
		250 A	2/0–300 kcmil Cu		1.1	1	CYA250J3	3	**194.00**
Compression Lug Kits for L-Frame Circuit Breakers									
Aluminum Compression Lug Kits	L-frame	250 A	4-300 kcmil Al/Cu	Unit/I-line♦	1.2	1	YA400L31K3	3	**294.00**
		400 A	4-300 kcmil Al/Cu		2.5	2	YA600L32K3	6	**540.00**
		250 A	2/0-500 kcmil Al/Cu			1	YA400L51K3	3	**361.00**
		600 A	2/0-500 kcmil Al/Cu			2	YA600L52K3	6	**718.00**
		400 A	500-750 kcmil Al 500 kcmil Cu			1	YA400L71K3	3	**425.00**
		250 A	4-300 kcmil Al/Cu			1	YA400L31K4	4	**383.00**
		400 A	4-300 kcmil Al/Cu			2	YA600L32K4	8	**709.00**
		250 A	2/0-500 kcmil Al/Cu			1	YA400L51K4	4	**474.00**
		600 A	2/0-500 kcmil Al/Cu		1.2	2	YA600L52K4	8	**950.00**
		400 A	500-750 kcmil Al 500 kcmil Cu		2.5	1	YA400L71K4	4	**560.00**
Copper Compression Lug Kits	L-frame	250 A	2/0-300 kcmil Cu	Unit/I-line♦	1.2	1	CYA400L31K3	3	**461.00**
		400 A	2/0-300 kcmil Cu		2.5	2	CYA600L32K3	6	**873.00**
		250 A	250-500 kcmil Cu			1	CYA400L51K3	3	**384.00**
		600 A	250-500 kcmil Cu			2	CYA600L52K3	6	**764.00**
		250 A	2/0-300 kcmil Cu			1	CYA400L31K4	4	**606.00**
		400 A	2/0-300 kcmil Cu			2	CYA600L32K4	8	**1147.00**
		250 A	250-500 kcmil Cu			1	CYA400L51K4	4	**505.00**
		600 A	250-500 kcmil Cu			2	CYA600L52K4	8	**1011.00**
Compression Lug Kits for M-Frame, P-Frame, and R-Frame Circuit Breakers									
Aluminum Compression Lug Kits	M-, P-frame	250 A	2/0-300 kcmil	Unit/I-line♦	3.7	2	YA250P3	1	**663.00**
		300 A	4/0-500 kcmil		3.9	2	YA300P5	1	**519.00**
		400 A	2/0-300 kcmil		4.3	2	YA400P3	2	**542.00**
		400 A	500-750 kcmil		3.7	2	YA400P7	1	**747.00**
		600 A	4/0-500 kcmil		3.9	2	YA600P5	2	**788.00**
		800 A	500-750 kcmil		4.3	2	YA800P7	2	**845.00**
	R-frame▲	1200 A	2/0-300 kcmil	I-line♦	3.8	4	YA1200R3	4	**663.00**
		1200 A	4/0-500 kcmil		4.0	4	YA1200R5	4	**707.00**
		1200 A	500-750 kcmil		4.4	4	YA1200R7	4	**888.00**
		2000 A	2/0-300 kcmil	Unit♦	▲	8	YA2000R3	2	**317.00**
		2000 A	4/0-500 kcmil		▲	8	YA2000R5	2	**291.00**
		2500 A	500-750 kcmil		▲	8■	YA2500R7	2	**350.00**
Copper Compression Lug Kits	M-, P-frame	400 A	4/0-500 kcmil	Unit♦	3.3	2	CYA400P5	1	**651.00**
		600 A	4/0-500 kcmil		3.3	2	CYA600P5	2	**753.00**
		800 A	500-750 kcmil		3.6	2	CYA800P7	2	**554.00**
	R-frame	1200 A	4/0-500 kcmil	I-Line♦	3.5	4	CYA1200R5	4	**987.00**
		1200 A	500-750 kcmil		3.8	4	CYA1200R7	4	**920.00**

▲ All unit-mount R-frame circuit breakers require terminal pads for mounting lugs of any type. See page 7-44.
■ 9 lugs for 3000 A circuit breakers
♦ Not for use on I-Line™ circuit breakers unless wire bending space is adequate.

New!



P-Frame Compression Lug Kit



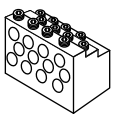
R-Frame Compression Lug Kit

PDC6HD6

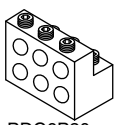
PDC6JD4

PDC3HD2

PDC3JD20



PDC12P4



PDC6P20

Crimp lug or PDC connectors extension past end or circuit breaker "A" See Table

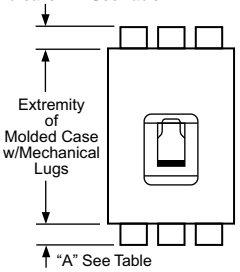


Table 7.94: Power Distribution Connectors for H-Frame, J-Frame and L-Frame Circuit Breakers

Use with Circuit Breaker Type	Circuit Breaker Ampere Rating	Wires Per Terminal & Wire Range	Dimension A (in.)	Cat. No.	Qty. Per Kit	$ Price Per Kit
HD, HG, HJ, HL★	15–150	(6) 14–6 AWG Cu	1.0	PDC6HD6	3	**443.00**
	15–150	(3) 14–2 AWG Cu	1.2	PDC3HD2	3	**434.00**
JD, JG, JJ, JL★	150–250	(6) 14–4 AWG Cu	1.0	PDC6JD4	3	**305.00**
	150–250	(2) 14–1 AWG and (1) 3–2/0 AWG Cu	1.5	PDC3JD20	3	**594.00**
LD, LG, LJ, LL	150–600	(3) 14–1 AWG and (2) 3–2/0 AWG	1.28△	PDC5DG20L3	3	**387.00**
	150–600	(12) 14–4 AWG	1.31△	PDC12DG4L3	3	**387.00**

★ OFF end only when OFF end is the load end.

Table 7.95: Power Distribution Connectors for M-Frame and P-Frame Circuit Breakers▼

Use for multiple load connections on one circuit breaker in place of standard distribution block to save space and time.
- Use on load end of circuit breaker only
- Use in UL508 Industrial Control applications only.
- Use in UL1995/CSA C22.2 No. 236 heating and cooling equipment.
- For Cu wire only.

Ampere Rating	(Wires Per Terminal) Wire Range	Cat. No.	Qty Per Kit	$ Price Per Kit
250–1200 A	(6) 12–2/0 AWG Cu	PDC6P20	3	**573.00**
	(6) 12–2/0 AWG Cu	PDC6P204	4	**756.00**
250–1200 A	(12) 10–4 AWG Cu	PDC12P4	3	**866.00**
		PDC12P44	4	**929.00**

▼ Not for use with I-Line™ circuit breakers.
△ Kit includes long terminal shield and cover, which adds 1.65 inches to standard lug with short terminal shield.

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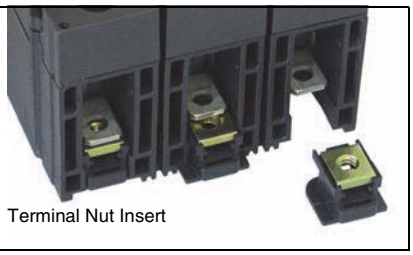
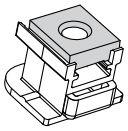
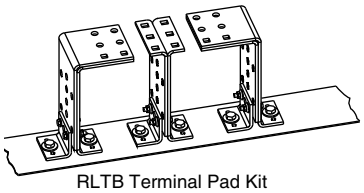


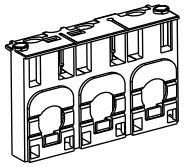
Terminal Nut Insert



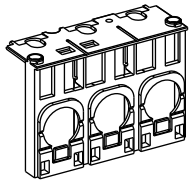
H-Frame Lug With Terminal Nut



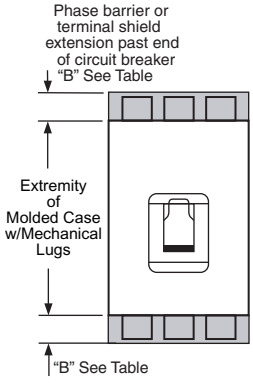
RLTB Terminal Pad Kit

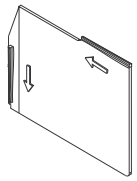


H-Frame Short Lug Shield



J-Frame Short Lug Shield





R-Frame Phase Barrier

Table 7.96: Terminal Nuts for Bus Bar Connection of H-Frame and J-Frame Circuit Breakers

Description	Frame	Tap	Cat. No.	Qty Per Kit	$ Price Per Kit
H-Frame Terminal Nut Insert–English	HD/HG/HJ/HL	1/4-20	S37425	2	**53.00**
H-Frame Terminal Nut Insert–English	HD/HG/HJ/HL	1/4-20	S37444	3	**75.00**
H-Frame Terminal Nut Insert–Metric	HD/HG/HJ/HL	M6	S37426	2	**53.00**
J-Frame Terminal Nut Insert–English	JD/JG/JJ/JL	1/4-20	S37427	2	**75.00**
J-Frame Terminal Nut Insert–English	JD/JG/JJ/JL	1/4-20	S37445	3	**113.00**
J-Frame Terminal Nut Insert–Metric	JD/JG/JJ/JL	M8	S37428	2	**75.00**
Control Wire Terminal for H-Frame Terminal Nut	HD/HG/HJ/HL		S37429	2	**53.00**
Control Wire Terminal for J-Frame Terminal Nut	JD/JG/JJ/JL		S37430	2	**53.00**

Table 7.97: Bus Bar Connections Hardware for L-Frame, M-Frame and P-Frame Circuit Breakers

New!

Frame	Description	Term. No.	Poles	Cat. No.	$ Price
L-Frame	Set of 4 terminal screws and washers for one side	F	4	S36967	**31.00**
M- and P-Frame	Bus Connector Kit for one pole, one end		1	S33928	**28.00**

Table 7.98: Terminal Pad Kits for R-Frame Circuit Breakers

R-Frame Circuit Breaker	Terminal Pad Kit		Field-Installable Kits			
	Usage	Lugs per Phase	3P Kit (One End Only)		4P Kit (One End Only)	
			Cat. No.	$ Price.	Cat. No.	$ Price
3000 A, 100% Rated	Required for cable or bus	9	RL3TB	**1440.00**	RL3TB4	**2016.00**
3000 A, Standard (80% Rated)	Required for cable or bus	8	RLTB	**914.00**	RLTB4	**1280.00**
2500 A, 100% Rated	Required for cable or bus					
2500 A, Standard (80% Rated)	Required for cable, optional for bus					
All Other R-Frame CIrcuit Breakers	Required for cable, optional for bus					

For cable connection to RLTB, use AL2500RK lug. See page 7-43.

Table 7.99: Terminal Shields and Phase Barriers

Used With	Description				Dimension B (in.)	Cat. No.	Qty Per Kit	$ Price
H- and J-Frame Mechanical Lugs	Short Lug Shield▲	Frame	Max. Wire Size					
		H-Frame 60 A	3 AWG		0.50	S37446	1	**149.00**
		H-Frame 150 A	3/0 AWG		0.50	S37447	1	**149.00**
		J-Frame	350 kcmil		0.24	S37448	1	**149.00**
H- and J-Frame Power Distribution Connectors and Compression Lugs		Compatible with:						
		PDC	Compression Lugs					
			Aluminum	Copper				
	H-Frame Long Lug Shield	PDC6HD6	YA060HD	CYA060HD	2.24	S37449	1	**209.00**
		PDC3HD2	YA150HD	CYA150HD				
	J-Frame Long Lug Shield	PDC6JD4	YA150JD	CYA150JD	1.68	S37450	1	**209.00**
		PDC3JD2	■	CYA250J3				
M-, P-Frame	Phase Barriers					S33646	3	**47.00**
R-Frame						S33998		**47.00**

New!

▲ Short lug shields provide IP20 protection for mechanical lugs and are compatible with control wire terminals.
■ J-frame terminal shield is not compatible with the YA250J35 compression terminal.

Table 7.100: Miscellaneous H-, J-, and L-Frame Circuit Breaker Accessories

Accessory	Description	Field-Installed Cat. No,	$ Price
Spare Parts	Bag of screws for accessory cover, L-frame	S432552	**63.00**
	1 spare toggle extension, L-frame	32595	**342.00**
	Set of 10 identification labels	LV429226	**82.00**

♦ DE5A Discount Schedule

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H-Frame and J-Frame Plug-in Mounting

H-Frame and J-Frame Drawout Mounting

Table 7.101: Plug-In and Drawout Mountings for H- and J-Frame Circuit Breakers (3P or 2P in a 3P module)

Description			Factory Installed Cat. No.	Field-Installed Cat. No.	$ Price
Complete Factory-Assembled Circuit Breakers	Plug-in base shipped with circuit breaker		N		638.00
	Drawout cradle shipped with circuit breaker		D		1419.00
Special Order Options for Plug-In and Drawout Circuit Breakers	Plug-In Base	Circuit breaker Only	HJ00		290.00
		Plug-in base kit		S29278	348.00
	Drawout Cradle	Circuit breaker only	HJ00		485.00
		Plug-in base kit		S29278	348.00
		Cradle side plates (fixed part of chassis)		S29282	587.00
		Circuit breaker side plates (moving part of chassis)		S29283	195.00
Accessories for Plug-In and Drawout	H-Frame Shutter Kit (set of two)			S37442	48.00
	J-Frame Shutter Kit (set of two)			S37443	48.00
	Secondary Disconnect Blocks	Fixed part 9-wire connector (mounted on base)		S29273	95.00
		Moving part 9-wire connector (mounted on circuit breaker)		S29274	60.00
		Support for 2-moving connectors		S29275	33.00
	Extended escutcheon with extended toggle handle			S29284	77.00
	Two position indicating switches (connected/disconnected)			S29287	207.00
	H-Frame Short Terminal Cover (3P			S37436	119.00
	J-Frame Short Terminal Cover (3P)			S37440	119.00

L-Frame Plug-In Mounting

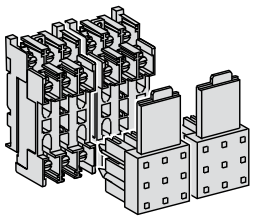
New!

L-Frame Drawout Mounting

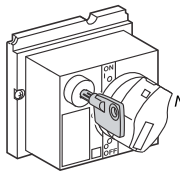
Table 7.102: Plug-In and Drawout Mountings for L-Frame Circuit Breakers

Description		Poles	Plug-in Mounting			Drawout Mounting		
			Factory Installed Cat. No.	Field-Installed Cat. No.	$ Price	Factory Installed Cat. No.	Field-Installed Cat. No.	$ Price
Kit (stationary and moving parts)		3	N		1542.00	D		2466.00
		4	N		2082.00	D		3281.00
Stationary Part	Plug-in base	3		S32514	1065.00		S32514	1065.00
		4		S32515	1439.00		S32515	1439.00
	Fixed part of chassis						S32532	693.00
Moving Part	Circuit breaker only		HJ00		710.00	HJ00		710.00
	Moving part of chassis						S32533	231.00
	Short terminal covers	3		2x S32562	149.00		2x S32562	149.00
		4		2x S32563	161.00		2x S32563	161.00

▲ Price shown is for quantity of 1.



L-Frame Disconnecting Blocks



New!

L-Frame Locking Device

Table 7.103: Plug-In and Drawout Accessories for L-Frame Circuit Breakers

Description			Field-Installed Cat. No.	$ Price
Secondary Disconnecting Blocks	Fixed Part	9-wire connector	S29273	95.00
	Moving Part	9-wire connector	S32523	60.00
		Support for 3 moving connectors	S32525	43.00
	Fixed + Moving	9-wire manual auxiliary connector	S29272	480.00
Shutters	Two shutters for plug-in base		32521	81.00
Chassis Accessories	Extended escutcheon for toggle		S32534	104.00
	Locking device (key lock is not included)		S29286	164.00
	Two position indicating switches (connected/disconnected)		29287	207.00

Table 7.104: Termination Options

Termination Letter
N = Plug-in
D = Drawout

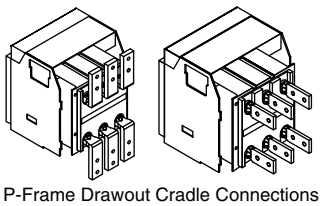
For factory-installed termination, place termination letter in the third block of the circuit breaker catalog number.

LGL36400U31X
└Termination No.

Table 7.105: Drawout Cradle and Accessories for P-Frame Circuit Breakers

Description		Cat. No.	$ Price
Drawout Cradle		Product Selector	6400.00
Cradle Connectors	Front Connected Flat (FCF)	SFCF12■♦	716.00
	Rear Connected T Horizontal/Vertical (RCTH/RCTV)	SRCTV12■♦	408.00
Cradle Accessories	Modbus™ cradle communication module	S33852	2237.00
	Safety shutters	S48933♦	342.00
	Secondary disconnects terminal shield	S33763♦	220.00
	Cradle position switch 1a/1b Form C— Connected/test/disconnected	S33170♦	148.00
	Low level cradle position switch 1a/1b Form C—Connected/test/disconnected	S33171♦	216.00
	Cell keying kit	S33767♦	97.00
	Disconnected position key locking—provision for Kirk or Federal Pioneer Lock	S33772♦	908.00
	Door interlock kit	S33786♦	330.00
	Racking interior kit	S33788♦	358.00
	Door escutcheon (for replacement only, included with circuit breaker)	S33857♦	308.00
	Transparent cover	S33859♦	1290.00
	Push-in terminal kit (3 wires)	S33098♦	120.00
	Push-in terminal kit (6 wires)	S33099♦	240.00
	Finger cluster	S33166♦	164.00
	Cluster grease (12 oz. tube)	S48899♦	132.00

■ Needs 2 kits per cradle.
♦ Discount Schedule DE2F



P-Frame Drawout Cradle Connections

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New!

PowerPact™ H-, J-, and L-Frame Micrologic™ Trip Units

Micrologic Standard Trip Unit

Micrologic Ammeter and Energy Trip Unit

PowerPact™ H-, J-, and L-frame molded case circuit breakers may be specified with any of the following Micrologic Electronic Trip Units.

Micrologic Standard 3.2/3.3 Trip Units

- True RMS sensing
- LI, LSI trip configurations
- Field-interchangeable trip units
- LED long-time pickup and trip indication
- Test kits available
- Thermal imaging

Micrologic Ammeter 5.2A/5.3A/6.2A/6.3A Trip Units

Includes all features listed for Micrologic standard trip unit, as well as:

- Advanced user interface
- Neutral protection
- Incremental fine tuning of settings
- Up to 12 alarms
- Digital ammeter—phase and neutral (4-pole only)
- Phase loading bar graph
- Maintenance indicators including contact wear, number of operations, operating hours, and load profiles
- Cause of trip information for troubleshooting assistance
- LCD Display
- Zone-selective interlocking (ZSI) (short-time & ground-fault)
- Optional Modbus™ communications—PowerLogic™ compatible

Micrologic Energy 5.2E/5.3E/6.2E/6.3E Trip Units

Includes all features listed for Micrologic ammeter trip unit, as well as:

- Ground-fault trip with programmable ground fault alarm (available on 6.2E/6.3E only)
- Power and energy measurement
- Power quality measurements
- Current demand and power demand measurements

Table 7.106: Micrologic Trip Units☆ for PowerPact H-, J-, and L-Frame Circuit breakers

x– Standard Feature o – Available Option

Features	Standard		Ammeter		Energy	
	3.2/3/3	3.2S/3.3S	5.2A/5.3A	6.2A/6.3A	5.2E/5.3E	6.2E/6.3E
LI	x					
LSI★		x	x		x	
LSIG / Ground-Fault Trip▼				x		x
Ground-Fault Alarm/Trip▼				x		x
Current Setting Directly in Amperes	x	x	x	x	x	x
True RMS Sensing	x	x	x	x	x	x
UL Listed	x	x	x	x	x	x
Thermal Imaging	x	x	x	x	x	x
LED for Long-time Pickup	x	x	x	x	x	x
LED for Trip Indication	x	x	x	x	x	x
LED for Green "Ready"	x	x	x	x	x	x
Up to 12 Alarms Used Together			x	x	x	x
Digital Ammeter			x	x	x	x
Zone-selective Interlocking△			x	x	x	x
Communications	o	o	o	o	o	o
LCD Display			x	x	x	x
Front Display Module FDM121			o	o	o	o
Advanced User Interface			x	x	x	x
Neutral Protection▼			x	x	x	x
Contact Wear Indication□			x	x	x	x
Incremental Fine Tuning of Settings			x	x	x	x
Load Profile□,◊			x	x	x	x
Power Measurement					x	x
Power Quality Measurements					x	x

★ The LSI with 3.2S/3.3S trip units have fixed short time and long time delays.
▼ Requires neutral current transformer on the three-phase four-wire loads
△ ZSI for H/J frames in only IN. for L-frame ZSI is In and OUT.
□ Indication available using the communication system only.
◊ % of hours in 4 current ranges: 0–49%, 50–79%, 80–89%, and >90% In.
☆ DC not available with electronic trip units.

Table 7.107: Micrologic Trip Unit Settings for H- and J-Frame

Model	Trip Function	Trip Unit	Ampere Setting
Standard	LI	3.2	15-20-25-30-35-40-45-50-60 35-40-45-50-60-70-80-90-100 50-60-70-80-90-100-110-125-150 70-80-100-125-150-175-200-225-250
	LSI	3.2S	15-20-25-30-35-40-45-50-60 35-40-45-50-60-70-80-90-100 50-60-70-80-90-100-110-125-150 70-80-100-125-150-175-200-225-250
Ammeter	LSI	5.2A	15–60 35–100 50–150 70–250
	LSIG	6.2A	15–60 35–100 50–150 70–250
Energy	LSI	5.2E	15–60 35–100 50–150 70–250
	LSIG	6.2E	15–60 35–100 50–150 70–250

Table 7.108: Micrologic Trip Unit Settings for L-Frame

Model	Trip Function	Trip Unit	Ampere Setting
Standard	LI	3.3	70-80-100-125-150-175-200-225-250 125-150-175-200-225-250-300-350-400 200-225-250-300-350-400-450-500-600
	LSI	3.3S	70-80-100-125-150-175-200-225-250 125-150-175-200-225-250-300-350-400 200-225-250-300-350-400-450-500-600
Ammeter	LSI	5.3A	125–400 200–600
	LSIG	6.3A	125–400 200–600
Energy	LSI	5.3E	125–400 200–600
	LSIG	6.3E	125–400 200–600

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PowerPact P- and R-Frame Micrologic Trip Units

Standard Trip Unit | Ammeter Trip Unit | Power Trip Unit | Harmonic Trip Unit | Adjustable Rating Plug

PowerPact™ P- and R-frame molded case circuit breakers may be specified with any of the following Micrologic Electronic Trip Units.

Micrologic (Standard) 3.0 and 5.0 Trip Units

- True RMS sensing
- LI, LSI trip configurations
- Field-interchangeable long-time rating plugs
- LED long-time pickup indication
- Test kits available
- Thermal imaging

Micrologic (Ammeter) 3.0A, 5.0A and 6.0A Trip Units

Includes all features listed for Micrologic standard trip unit, as well as:

- LSIG trip configurations
- Digital ammeter—phase and neutral (4-pole only)
- Phase loading bar graph
- LED trip indication
- Zone-selective interlocking (ZSI) (short-time & ground-fault)
- Optional Modbus™ communications—PowerLogic™ compatible

Micrologic (Power) 5.0P and 6.0P Trip Units

Power measurement and advanced protection features includes all features listed for Micrologic ammeter trip unit, as well as:

- LSI trip configuration with programmable ground fault alarm
- LSIG (Ground-fault trip) with programmable ground fault alarm
- Incremental “fine tuning” of L, S, I, and G pickup and delay settings
- LCD dot matrix display and LED trip indication
- Advanced user interface
- Advanced protection IDMTL—selectable long-time delay bands
- Neutral protection
- Power measurement
- Contact wear indication
- Modbus communications—PowerLogic compatible
- Local and remote settings

Micrologic (Harmonic) 5.0H and 6.0H Trip Units

Power quality measurement and advanced protection features. Includes all features listed for the Micrologic power trip unit, as well as:

- Enhanced power measurements functions
- Power quality measurements

Adjustable Rating Plugs for PowerPact™ P-Frame and R-Frame and Masterpact™ NT and NW Circuit Breakers—Selection

To provide maximum design flexibility, system protection, and field upgradeability, each Micrologic™ trip unit is equipped with an interchangeable long-time rating plug. Each trip unit requires an adjustable rating plug to determine the long-time pickup range of the circuit breaker. These plugs are factory installed on new trip units, or can be ordered separately for field-installable upgrades.

Adjustable rating plugs are offered in eight different ranges of long-time pickup adjustments. The following chart show the ranges of adjustments. Each adjustment times the sensor rating (Ir X In) of the circuit breaker sets the long-time pickup value of the circuit breaker.

Table 7.109: Long-time Pickup Settings

Rating Plug	Long-time Pickup Settings								
A	.40	.45	.50	.60	.63	.70	.80	.90	1.0
B	.40	.44	.50	.56	.63	.75	.88	.95	1.0
C	.42	.50	.53	.58	.67	.75	.83	.95	1.0
D	.40	.48	.64	.70	.80	.90	.93	.95	1.0
E	.60	.70	.75	.80	.85	.90	.93	.95	1.0
F	.84	.86	.88	.90	.92	.94	.96	.98	1.0
G	.66	.68	.70	.72	.74	.76	.78	.80	.82
H	.48	.50	.52	.54	.56	.58	.60	.62	.64

Table 7.110: Micrologic Trip Units

x– Standard Feature o – Available Option

Features	Standard		Ammeter			Power		Harmonic	
	3.0	5.0	3.0A	5.0A	6.0A	5.0P	6.0P	5.0H	6.0H
LI	x		x						
LSI (Instantaneous can be turned off)		x		x	x	x	x	x	x
LSIG / Ground-Fault Trip▲					x		x		x
Ground-Fault Alarm (No Trip) ▲■						x		x	
Ground-Fault Alarm and Trip ▲							x		x
Adjustable Rating Plugs	x	x	x	x	x	x	x	x	x
True RMS Sensing	x	x	x	x	x	x	x	x	x
UL Listed	x	x	x	x	x	x	x	x	x
Thermal Imaging	x	x	x	x	x	x	x	x	x
Phase Loading Bar Graph			x	x	x	x	x	x	x
LED for Long-time Pickup	x	x	x	x	x	x	x	x	x
LED for Trip Indication			x	x	x	x	x	x	x
Digital Ammeter			x	x	x	x	x	x	x
Zone-selective Interlocking			x	x	x	x	x	x	x
Communications			o	o	o	x	x	x	x
LCD Dot Matrix Display						x	x	x	x
Advanced User Interface						x	x	x	x
Protective Relay Functions						x	x	x	x
Neutral Protection						x	x	x	x
Contact Wear Indication						x	x	x	x
Incremental Fine Tuning of Settings						x	x	x	x
Selectable Long-time Delay Bands						x	x	x	x
Power Measurement						x	x	x	x
Power Quality Measurements								x	x
Waveform Capture								x	x

▲ Requires neutral current transformer in 3Ø4W systems.
■ Requires M2C or M6C Programmable Contact Module.

Table 7.111: Micrologic Trip Unit and Options

Model	Protection	Additional Features	Field-Installable Cat. No.♦	Kit $ Price / Circuit Breaker $ Price Adder
2.0 (IEC only)	LSO	None	S132R	**2920.00**
3.0 (UL/ANSI only)	LI		S131A	**2920.00**
5.0	LSI		S133A	**4176.00**
2.0A (IEC only)	LSO	Ammeter	S142R★	**4554.00**
3.0A (UL/ANSI only)	LI		S141A★	**4554.00**
5.0A	LSI		S143A★	**5812.00**
6.0A	LSIG		S144A★	**7418.00**
5.0P	LSI	Metering, Adv. Protection	S163A★▼	**8720.00**
6.0P	LSIG		S164A★▼	**10324.00**
5.0H	LSI	Metering, Adv. Protection & Harmonic Analysis	S173A★▼	**14770.00**
6.0H	LSIG		S174A★▼	**16374.00**

♦ The standard rating plug supplied with a trip unit will be the “A” rating plug. To specify an alternative adjustable rating plug, please add the letter designation to the end of the catalog number. Please refer to page 7-48 for a complete listing of adjustable settings available with each plug. (Example: S143B would specify a “B” rating plug instead of the standard "A" plug.) Use suffix “N” if no rating plug is required, deduct **$200.00** from the complete trip unit kit price.
★ When replacing a standard trip unit with Type A (Ammeter), P (Power metering) or H (Harmonic analysis) trip unit, order the 12-pin connector kit S33101 for the Masterpact NW and NT and the PowerPact P-frame drawout circuit breakers or kit S33100 for PowerPact P-frame and R-frame unit-mount and I-Line circuit breakers. See page 7-48.
▼ Requires Circuit Breaker Communications Module.
△ The LSI with 3.2S/3.3S trip units have fixed short time and long time delays.
□ Requires neutral current transformer on the three-phase four-wire loads
◊ ZSI for H/J frames in only IN. for L-frame ZSI is In and OUT.
☆ Indication available using the communication system only.
▽ % of hours in 4 current ranges: 0–49%, 50–79%, 80–89%, and >90% In.

Table 7.112: Special Options

Description	Factory-Installed Suffix	Field-Installable Cat. No.	$ Price
Ship circuit breaker in closed position	YK	N/A	**N/C**
CT Characterization (Calibrated trip system)	Q	N/A	**3308.00**

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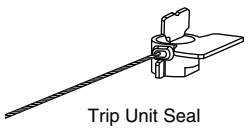
Full Function Test Kit


Trip Unit Seal


Sensor Plug

Adjustable rating plug "A" is installed as standard on all Micrologic trip unit orders. However, an alternative selection may be specified from the "Assembled" table below, and factory installed with your trip unit order at no additional charge. To order, please attach the appropriate catalog suffix to the end of the trip unit Cat. No. (after specifying trip unit options). Adjustable rating plugs may also be purchased as field-installable components from the table below.

Table 7.113: Rating Plugs

Rating Plug▲	Factory-Installed		Field-Installable	
	Cat. Suffix	$ Price Adder	Cat. No.■	$ Price
A	A (standard)	N/C	S48818	200.00
B	B	N/C	S48819	200.00
C	C	N/C	S48820	200.00
D	D	N/C	S48836	200.00
E	E	N/C	S48837	200.00
F	F	N/C	S48838	200.00
G	G	N/C	S48839	200.00
H	H	N/C	S48840	200.00

▲ Long-time pickup amperes (Ir) = Sensor Rating (In) X Setting of rating plug. "Fine adjustment tuning" is included on Micrologic Power and Harmonic trip units, allowing for incremental settings of 1 A between the plug setting and.40 X Sensor Rating.
■ DE2F Discount Schedule

Table 7.114: Neutral Current Transformers

For Use with Circuit Breaker	Cat. No.	Sensor	$ Price
H-Frame	S429521	60–100	588.00
	S430562	150	588.00
J-Frame	S430563	250	588.00
L-Frame	S432575	400–600	647.00
P-Frame	S33575♦,★	250	1914.00
	S33576♦,★	400–1600	1914.00
R-Frame	S48916♦,★	250	2014.00
	S34036♦,★	400–1600	2014.00
	S48896♦,★	2000	2044.00
	S48182♦,★	3000	2208.00
All	NCTWIRING	All	204.00

♦ DE2F Discount Schedule
★ Includes NCTWIRING kit.

Table 7.115: Trip Unit Accessories

Device	Frame	Cat. No.◊	$ Price
Pocket Tester	H/J/L	S434206	1000.00
UTA Tester		STRV00910	16365.00
Spare UTA Tester		STRV00911	6000.00
BLuetooth/Modbus for UTA Tester		SVW3A8114	2800.00
Spare Power Supply for UTA Tester 110–120 Vac		TRV00915	771.00
Micrologic Cord for UTA Tester		TRV00917	1210.00
Micrologic 5/6 Cover, Transparent	H/J	S429478	19.00
Micrologic 2/3 Cover, Transparent		S429481	41.00
Micrologic 5/6 Cover, Transparent	L	S432459	36.00
Micrologic 2/3 Cover, Transparent		S432461	156.00
LCD Display for Micrologic 5	H/J/L	S429483	575.00
LCD Display for Micrologic 6		S429484	575.00
Hand-held Test Kit	P/R	S33594	5386.00
Primary Injection Test Adaptor		S33937	252.00
Full-function Adapter Kit		S48981	19699.00
Full-function Test Kit		S33595	33792.00
Seven-pin Test Cable (for connection between test kit and trip unit)▼		S48907	1488.00
Two-pin Test Cable (for connection between test kit and trip unit)△		S48908	784.00
230 Vac Filtered Power Cord□	P/R	S48856	166.00
120 Vac Filtered Power Cord□		S48855	61.00
Trip Unit Battery for Trip Indicator Lights		S33593	438.00
Power supply with:	H/J/L/P/R		1130.00
24–30 Vdc input		685823	
48/60 Vdc input		685824	
125 Vdc input		685825	
110–130 Vac input		685826	
200–240 Vac input		685827	
380–415 Vac input		685829	
Micrologic A Trip Unit Cover, clear	P/R	S33592	16.00
Micrologic P/H Trip Unit Cover, opaque gray		S47067	16.00
Trip Unit Seal (6 pieces) for compliance with NEC 240.6(c)	H/J/L/P/R	MICROTUSEAL	60.00
12-pin Trip Unit Connector for NT/NW Masterpact Circuit Breakers	P/R	S33101	228.00
12-pin Trip Unit Connector for P- and R-Frame Circuit Breakers		S33100☆	255.00
Battery Back-up (12 Hours)		685831	3570.00

▼ Used for testing Micrologic trip units. Included in the price of the Hand-held/Full-function Test Kits. Kit for replacement only.
△ Used for testing STR trip units. Included in the price of the Hand-held/Full-function Test Kits. Kit for replacement only.
□ Included in the price of the Full-function Test Kit. Kit for replacement only.
◊ DE2F Discount Schedule.
☆ DE2 Discount Schedule.

Table 7.116: Sensor Plugs for P- and R-Frame Circuit Breakers▽♦

Circuit Breaker	Sensor Plug Range	Sensor Plug Catalog No.	Circuit Breaker Frames Accepting Sensor Plug									$ Price◒
P-Frame Circuit Breaker			250 A	400 A	600 A	630 A✱	800 A	1000 A	1200 A	1250 A✱	1600 A	
UL	250 A	S47052	X									1040.00
	400 A	S47053		X	X		X					1040.00
	600 A	S48823			X		X	X	X			1040.00
	800 A	S33092					X	X	X			1040.00
	1000 A	S33093						X	X			1040.00
	1200 A	S48824							X			1040.00
IEC	630 A	S33091				X	X	X		X	X	1040.00
	800 A	S33092					X	X		X	X	1040.00
	1000 A	S33093						X		X	X	1040.00
	1250 A	S33094								X	X	1040.00
	1600 A	S33095									X	1040.00
R-Frame Circuit Breaker			600 A	800 A	1000 A	1200 A	1600 A	2000 A	2500 A	3000 A	3200 A	
UL	600 A	S48823	X	X								1040.00
	800 A	S33092		X	X	X	X					1040.00
	1000 A	S33093			X	X	X	X				1040.00
	1200 A	S48824				X	X	X	X			1040.00
	1600 A	S33095					X	X	X	X		1040.00
	2000 A	S33982						X	X	X		1040.00
	2500 A	S33983							X	X		1040.00
	3000 A	S48825								X		1040.00
IEC	1600 A	S33095					X	X	X	X	X	1040.00
	2000 A	S33982						X	X	X	X	1040.00
	2500 A	S33983							X	X	X	1040.00
	3200 A	S33984									X	1040.00

▽ For use only with circuit breakers with date codes later than 07011.
◒ DE2F Discount Schedule.
✱ IEC Only.
♦ See rating plug for long-time pickup range on page 7-47.

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Table 7.117: Trip Unit Field-Installable Accessories for P- and R-Frame Circuit Breakers

Description	Factory-Installed		Field-Installable Kit Cat. No.							$ Price
			P-Frame					R-Frame		
	Cat. No. Suffix	$ Price Adder	Unit Mount	I-Line	Motor Operated	Drawout	With Rotary Handle	Unit Mount	I-Line	
Circuit Breaker Communication Module (BCM) (Modbus)	E1	**1778.00**	S64205	S64205	S64207	S64206	S64205	S64205	S64205	**2805.00**
Two Programmable Contacts Module (M2C)	V	**1248.00**	S64273	S64273	S64273	S64273	S64273	S64273	S64273	**1248.00**
Six Programmable Contacts Module (M6C)	W	**1599.00**	S64204	S64204	S64204	S64202	S64204	S64201	S64201	**1665.00**
External Voltage Sensing (EVS)	YV	**290.00**	S64203	S64203	S64210	S64209	S64210	S64208	S64208	**330.00**

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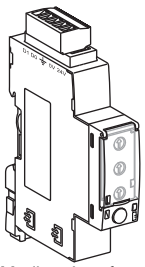
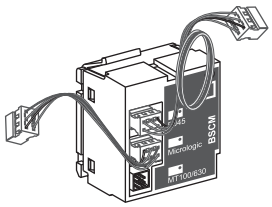
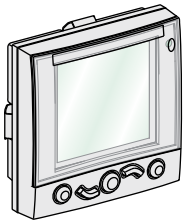


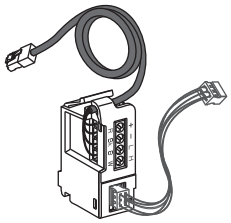
Modbus Interface Module (IFM)



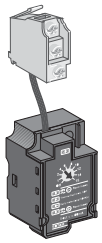
Breaker Status and Control Module (BSCM)



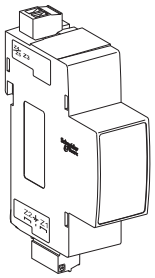
Front Display Module (FDM)



NSX Cord for Modbus Communications



SDTAM Module (Remote indication relay for motor applications)



ZSI Interface Module (Connects PowerPact H/J/L circuit breakers to PowerPact P/R and Masterpact NT/NW circuit breakers)

Table 7.118: Trip Unit Field-Installable Accessories for H-, J-, and L-Frame Circuit Breakers▼

Description		Factory-Installed		Field-Installable Kit Cat. No.	
		Cat. No. Suffix	$ Price Adder	Cat. No.	$ Price
External Accessories					
Modbus Interface Module IFM▲		—	—	STRV00210	**1000.00**
Stacking Connections for IFM (10)		—	—	TRV00217	**946.00**
Front Display Module FDM121▲		—	—	STRV00121	**1500.00**
FDM Mounting Accessory (Dia. 22 mm)		—	—	TRV00128	**26.00**
Isolated Modbus Repeater Module		—	—	STRV00211	**1508.00**
ZSI Interface Module		—	—	S434212	**975.00**
Internal Accessories					
NSX Cord ■ (for Modbus Communication)	L = 1.3 m	EA	**576.00**	S434201	**480.00**
	L = 3 m	EB	**600.00**	S434202	**500.00**
BSCM (Breaker Status and Control Module) with NSX Cord■	L = 1.3 m	EG△	**1776.00**	S434201BS	**1480.00**
	L = 3 m	EH△	**1800.00**	S434202BS	**1500.00**
Replacement BSCM		—	—	S434205	**1000.00**
NSX Cord for V > 480 Vac■	L = 1.3 m	ED	**2880.00**	S434204	**2400.00**
	L = 3 m	EE	**3000.00**	S434303	**2500.00**
BSCM with NSX Cord for V > 480 Vac■	L = 1.3 m	EK△	**4080.00**	S434204BS	**3400.00**
	L = 3 m	EL△	**4200.00**	S434303BS	**3500.00**
24 Vdc Terminal Block		EN	**480.00**	S434210	**400.00**
SDTAM 24/415 Vac/dc Module♦		V	**1114.00**	S429424	**928.00**
SDX Module 24/415 Vac/dc★		V	**1820.00**	S429532	**1517.00**

▲ Require NSX Cord
■ Installation requires IFM (STRV00210) for Modbus communication and/or FDM (STRV00121) for external display
♦ Remote indication relay for motor applications
★ Remote indication relay
▼ For proper selection, see catalog 0611CT1001.
△ If using with motor operator requires communicating motor operator (suffix NC).

Table 7.119: Wire Harness□ and ULP Cords for H-, J-, and L-Frame Circuit Breakers

Description		Factory-Installed		Field-Installable Kit Cat. No.	
		Cat. No. Suffix	$ Price Adder◊	Cat. No.	$ Price
ZSI Wire Harness, H/J Frame		YH3	**237.00**	S434300	**197.00**
ZSI Wire Harness, L-Frame		YH3	**237.00**	S434301	**197.00**
ENCT Wire Harness		YH2	**237.00**	S434302	**197.00**
OF Wire Harness		YH1	**237.00**	S434500	**197.00**
SD/SDE Wire Harness		YH1	**237.00**	S434501	**197.00**
SDx/SDTAM Wire Harness		YH1	**237.00**	S434502	**197.00**
MN Wire Harness		YH1	**237.00**	S434503	**197.00**
MX Wire Harness		YH1	**237.00**	S434504	**197.00**
24 Vdc Terminal Block Wire Harness☆		YH1	**237.00**	S434505	**197.00**
Motor Operator Wire Harness		YH1	**237.00**	S434506	**197.00**
Communicating Motor Operator Wire Harness		YH1	**237.00**	S434507	**197.00**
NSX Wire Harness☆		YH1	**237.00**	S434508	**197.00**
ENCT and ZSI Wire Harness		YH4	**237.00**	—	—
10 RJ45 Connectors female/female		—	—	TRV00870	**195.00**
10 ULP Line Terminations		—	—	TRV00880	**130.00**
10 RJ45/RJ45 Male Cords	L = 0.3 m	—	—	TRV00803	**200.00**
	L = 0.6 m	—	—	TRV00806	**320.00**
5 RJ45/RJ45 Male Cords	L = 1 m	—	—	TRV00810	**195.00**
	L = 2 m	—	—	TRV00820	**300.00**
	L = 3m	—	—	TRV00830	**500.00**
1 RJ45/RJ45 Male Cord	L = 5 m	—	—	TRV00850	**155.00**

□ Wire harness is required for I-Line applications, optional for unit-mount applications
YH1 = all installed accessories but ZSI and ENCT
YH2 = ENCT and all installed accessories
YH3 = ZSI and all installed accessories
YH4 = ZSI, ENCT and all installed accessories
◊ Price adder is for each accessory ordered.
☆ I-Line wire harness is included for communication network accessories.
Optional wire harness for unit mount requires YH1 suffix.

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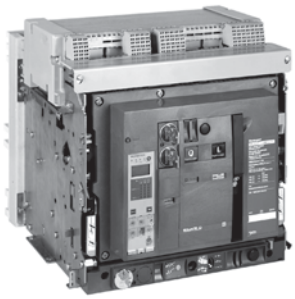
Masterpact™ NT/NW Circuit Breakers

Class **613** / Refer to Catalog **0613CT0001**

Masterpact NT



Masterpact NW

The Masterpact universal power circuit breaker offers a family of circuit protection products meeting the most common world standards, ANSI, UL and IEC. The basic design platform for each is common. The final result is UL, ANSI and IEC circuit breakers with the same basic external dimensions, features and accessories.

Full-Featured Performance

- Complete product offering up to 200 k AIR without fuses
- Circuit breakers tested to show arc flash hazard risk category as referenced by NFPA70E
- 800 A to 6000 A frames, fixed and draw-out
- Rated for AC voltage systems through 600 V (635 V ANSI)
- Short-time withstand ratings up to 100 kA
- Cradle position indicator: connected, test and disconnected
- Simple, visual contact wear indicators
- Full complement of field-installable accessories common to all standards
- Four interchangeable Micrologic trip units to choose from
- Available PowerLogic™ based power metering and monitoring capabilities
- Available protective relay functions as defined by ANSI C37.2 and C37.90

The following charts show the Masterpact NW and NT ratings for ANSI and UL 489. See Pricing Guide **0613PL0001** and Catalog **0613CT0001**.

Table 7.120: Masterpact NW Circuit Breaker Ratings

Standard		ANSI C37 Certified/UL 1066 Listed																		UL 489 Listed							
Frame Rating		800–1600 A						2000 A					3200/4000 A△				4000/5000 A			800/1200/1600/2000 A				2500/3000 A		4000/5000/6000 A	
Interrupting Code		N1	H1	H2	H3	L1□	L1F□	H1	H2	H3	L1□	L1F□	H1	H2	H3	L1□	H2	H3	L1□	N	H	L□	LF□	H	L□	H	L□
Interrupting Current (kA RMS) 50/60 Hz	240 Vac	42	65	85	100	200	200	65	85	100	200	200	65	85	100	200	85	100	200	65	100	200	200	100	200	100	200
	480 Vac	42	65	85	100	200	200	65	85	100	200	200	65	85	100	200	85	100	200	65	100	150	150	100	150	100	150
	600 Vac	42	65	85	85	130	130	65	85	85	130	130	65	85	85	130	85	85	130	50	85	100	100	85	100	85	100
Short-time Withstand Current (kA RMS)		42	65	85	85	30	22	65	85	85	30	22	65	85	85	100	85	85	100	42▲	65▲	30▲■	22	65	65	85	100
Built-in Instantaneous Override (kA RMS ±10%)		♦	♦	♦	85	35♦	24	—	—	85	35	24	—	—	85	117	—	—	117	40	40	35▲■	24	65	65	75	75
Close and latch rating (kA RMS)		42	65	40	40	25	22	65	40	40	25	22	65	40	40	40	85	75	40	40	40	25★	22	40	40	40	40
Tested to show the arc flash hazard risk category as referenced by NFPA70E		—	—	—	—	—	Yes	—	—	—	—	Yes	—	—	—	—	—	—	—	—	—	—	Yes	—	—	—	—
Breaking time		25–30 ms with no intentional delay (9 ms for L1, L1F, L and LF)																									
Closing time		70 ms																									
Sensor Rating		100–250 A 400–800 A 800–1600 A						1000–2000 A					1600–3200 A				2000–4000 A 2500–5000 A			100–250 A 400–800 A 600–1200 A 800–1600 A 1000–2000 A				1200–2500 A 1600–3000 A		2000–4000 A 2500–5000 A 3000–6000 A	
Endurance Rating (C/O Cycles) With No Maintenance	Mechanical	12,500						10,000					10,000			5k	5,000			12,500▼				10,000		5,000	
	Electrical	2800						1,000					1,000			1k	1,000			2800▼				1,000		1,000	

▲ 24 kA RMS for 800 A circuit breaker frame with 100 A or 250 A sensor.
■ 65 kA RMS for 2000 A.
♦ None except 24 kA RMS for 800 A circuit breaker frame with 100 A or 250 A sensor.
★ 40 kA RMS for 2000 A.
▼ The endurance rating for 2000 A, N/H/L/LF is 10,000 for mechanical and 1000 for electrical.
△ 4000 A standard width circuit breaker is not available in L1 interrupting rating code or drawout construction (fixed mounting only).
□ Drawout mounted only.

Table 7.121: Masterpact NT Circuit Breaker Ratings

Standard		ANSI C37 Certified/UL 1066 Listed	UL 489 Listed													
Frame Rating		800 A	800 A					1200 A					1600 A◊			
Interrupting Code		N1	N	H	L1	L	LF☆	N	H	L1	L	LF☆	N	H	L1	L
Interrupting Current (kA RMS) 50/60 Hz	240 Vac	42	50	65	100	200	200	50	65	100	200	200	50	65	100	200
	480 Vac	42	50	50	65	100	100	50	50	65	100	100	50	50	65	100
	600 Vac	—	35	50	—	—	—	35	50	—	—	—	35	50	N/A	N/A
Short-time Withstand Current (kA RMS)		42	35	35	10	10	10	35	35	10	10	10	35	35	10	10
Built-in Instantaneous Override (kA RMS ±10%)		—	40	40	10	10	10	40	40	10	10	10	40	40	10	10
Close and latch rating (kA RMS)		40	25	25	10	10	10	25	25	10	10	10	25	25	10	10
Tested to show the arc flash hazard risk category as referenced by NFPA70E		—	—	—	—	—	Yes	—	—	—	—	Yes	—	—	—	—
Breaking time		25–30 ms with no intentional delay	25–30 ms with no intentional delay (9 ms for L and LF)													
Closing time		< 50 ms														
Sensor Rating		100–250 A 400–800 A	100–250 A 400–800 A					600–1200 A —					800–1600 A			
Endurance Rating (C/O Cycles) With No Maintenance	Mechanical	12,500	12,500					12,500					12,500			
	Electrical	2800	2800					2800					2800			

◊ Fixed-mounted only.
☆ Drawout mounted only.

NWMPRRT

Table 7.122: Masterpact NW/NT Circuit Breaker Remote Racking

Description	Cat. No.	$ Price
Masterpact NW/NT Remote Racking Devices▽	NWNTMPRRT	**32000.00**
Masterpact NW Remote Racking Device▽	NWMPRRT	**21500.00**
Masterpact NT Remote Rackign Device▽	NTMPRRT	**21500.00**
Mounting Bracket Kit for NW Remote Racking (contains 10 mounting brackets)◒	S47100	**215.00**
Mounting Bracket Kit for NT Remove Racking (contains 10 mounting brackets)◒	S47104	**215.00**
Control Unit for NW Remote Racking◒	S47101	**3650.00**
30 ft Control Cable for NW Remote Racking◒	S47102	**620.00**
Drive Shaft for NW Remote Racking◒	S47103	**290.00**
Drive Shaft for NT Remote Racking◒	S47105	**290.00**

▽ Unit comes with 10 mounting brackets included.
◒ For replacement only.

DE2F Discount Schedule

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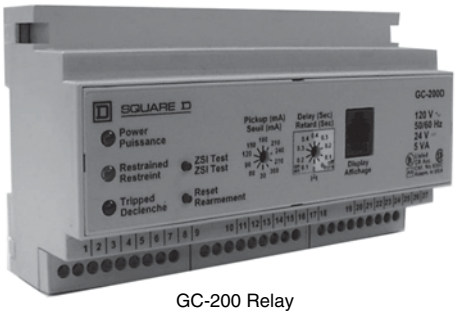
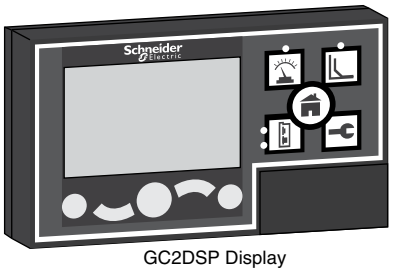


GC-200 Relay



GC2DSP Display


T3B Toroid Sensor


GT912 Rectangular Sensor

GC-200 Ground-Fault Relay System

The GC-200 Ground-fault relay system protects a grounded distribution system from low-level arcing ground faults. The system includes the GC-200 relay, a sensor (current transformer), and optional GC DSP display and is used with a bolted pressure switch or circuit breaker to open a circuit upon detection of a ground fault. (Replaces GC-100 relay.)

GC-200 Relay Features

- Five models with sensitivities suitable for main, feeder, or branch circuits
- Ten adjustable pickup settings for each model
- Small, non-metallic enclosure mounts on DIN rail
- 10 A and 5 A output contacts for trip and alarm
- Zone-selective interlocking (ZSI) to optimize coordinated systems
- I^2t inverse time characteristics

GC2DSP Display (Optional)

- Real-time display of ground-fault values
- Also recalls ground-fault at last trip or at maximum since reset
- Allows remote testing or resetting of the relay
- LCD back-lit display
- Surface mounts over panel meter cutout
- Fine adjust pickup settings (D and E versions only)

Sensors

- Zero sequence sensing current transformers for all phases and neutral
- Several sizes of toroids and rectangular CTs
- Many are split-core or open frame for ease of installation

Table 7.123: Ground-Fault Relay

Cat. No.	Description	Specifications	$ Price
GC200C	Ground-fault relay	3.0 A–30.0 A	2960.00
GC200D		30.0 A–300 A	2960.00
GC200E		120 A–1200 A	2960.00
GC2DSP	Display module		948.00
VW3A1104R10	Display cable ■	1 m	35.00
VW3A1104R30		3 m	35.00
VW3A1104R50		5m	35.00
VW3A1104R100		10 m	45.00
GC2ADAPTER	Adapter plate	To replace GSDSP with GC2DSP	59.00

▲ One GC12 twelve foot cable is included with GCDSP display modules.
■ Discount schedule CP4C

Table 7.124: GC-200 Relay Settings

Cat. No.	Adjustable Pickup Settings (in Amperes)									
GC200C	3	6	9	12	15	18	21	24	27	30
GC200D	30	90	90	120	150	180	210	240	270	300
GC200E	120	240	360	480	600	720	840	960	1080	1200

Table 7.125: GC-200 Sensors

Relay Cat. No.	Sensor Cat. No.	Type	CT Ratio	Window Dimensions		$ Price
				in	mm	
GC200C GC200D	T2A	Toroid	1000:1	1.875 dia.	48 dia.	704.00
	T3A	Toroid		2.75 dia.	70 dia.	774.00
	T6A	Toroid		5.75 dia.	146 dia.	774.00
	T6AS	Toroid, split-core		5.75 dia.	146 dia.	1326.00
	T9A	Toroid		8.75 dia.	222 dia.	1106.00
	R713A	Rectangular		7.5 x 13.5	191 x 343	3063.00
	R417A			4.25 x 17.625	108 x 448	3650.00
	R826A			8 x 26.5	203 x 674	4446.00
GC200E	All "A" type sensors above, plus:					
	RZ511	Rectangular, Open Frame	1000:1	4.5. x 11	114 x 280	1914.00
	RZ521		1000:1	4.5 x 21	114 x 534	2255.00
	RZ531		1000:1	4.5 x 31	114 x 788	2706.00
	RZ535		1000:1	4.5 x 35	114 x 890	2834.00
	RZ1011	Rectangular, Open Frame	1000:1	10.5 x 11	267 x 280	2450.00
	RZ1021		1000:1	10.5 x 21	267 x 514	3075.00
	RZ1031		1000:1	10.5 x 31	114 x 788	4233.00
	GT912	Rectangular, Open Frame	600:1	5.5 x 8.5	140 x 216	1769.00
	GT918		600:1	5.5 x 14.5	140 x 368	2058.00
	GT930		600:1	5.5 x 26.5	140 x 673	2766.00
	GT1218	Rectangular, Open Frame	600:1	8.5 x 14.5	216 x 368	2645.00
	GT1224		600:1	8.5 x 20.5	216 x 521	2901.00
	GT1230		600:1	8.5 x 26.5	292 x 673	3246.00
	GT1327	Rectangular, Open Frame	600:1	9.5 x 24	241 x 610	2844.00
	GT1330		600:1	9.5 x 27	241 x 686	3219.00
	GT1530	Rectangular, Open Frame	600:1	11.5 x 26.5	292 x 673	3726.00

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RH99M

RH99P

PA50

SA200

Vigirex™ Ground-Fault Relay System

The Vigirex ground-fault relays, with associated sensors (current transformers), measure the residual current in an electrical installation to detect levels which may be damaging. When used for protection, they cause an associated circuit breaker or switch to interrupt the supply of power to the protected system. They may also be used for monitoring only, with output to an alarm. The product line includes fixed sensitivities from 30 mA to 1 A and adjustable sensitivities up to 30 A.
The Vigirex relays may be easily mounted on DIN rail or may be panel mounted in a meter cutout. Sensors for conductors range from a little more than an inch diameter toroids, to large rectangular sensors measuring 6 x 18 inches. The compact size of the relay and its sensor make it ideal for protection of OEM equipment as well as branch circuits.

Table 7.126: Vigirex Ground-Fault Relays (UL 1053 Listed)

Model	Delay	Reset	Control Voltage	Sensitivity	Cat. No.	$ Price
DIN Rail Mounted						
RH10M	Instantaneous	Manual	12–24 Vac/12–48 Vdc	30 mA 100 mA 300 mA 500 mA 1 A	56300 56302 56305 56306 56307	**1988.00**
			110–130 Vac	30 mA 100 mA 300 mA 500 mA 1 A	56320 56322 56325 56326 56327	**1988.00**
			220–240 Vac	30 mA 100 mA 300 mA 500 mA 1 A	56330 56332 56335 56336 56337	**1988.00**
RH21M	Instantaneous or 60 msec (2 settings)	Manual	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac	30 mA▲ or 300 mA (2 settings)	56360 56362 56363	**2363.00**
RH99M	Adjustable (9 settings): 0, 0.06, 0.15, 0.23, 0.31, 0.5, 0.8, 1.0, 4.5 sec	Manual	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac	Adjustable, (9 settings): 0.03▲, 0.1, 0.3, 0.5, 1, 3, 5, 10, 30 A	56370TD 56372TD 56373TD	**2700.00**
		Automatic	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac		56390TD 56392TD 56393TD	**2700.00**
Panel Mounted						
RH10P	Instantaneous	Manual	12–24 Vac/12–48 Vdc	30 mA 100 mA 300 mA 500 mA 1 Amp	56400 56402 56405 56406 56407	**2063.00**
			110–130 Vac	30 mA 100 mA 300 mA 500 mA 1 Amp	56420 56422 56425 56426 56427	**2063.00**
			220–240 Vac	30 mA 100 mA 300 mA 500 mA 1 A	56430 56432 56435 56436 56437	**2063.00**
RH21P	Instantaneous or 60 msec (2 settings)	Manual	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac	30 mA▲ or 300 mA (2 settings)	56460 56462 56463	**2438.00**
RH99P	Adjustable (9 settings): 0, 0.06, 0.15, 0.23, 0.31, 0.5, 0.8, 1.0, 4.5 sec	Manual	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac	Adjustable (9 settings): 0.03▲, 0.1, 0.3, 0.5, 1, 3, 5, 10, 30 A	56470TD 56472TD 56473TD	**2813.00**
		Automatic	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac		56490TD 56492TD 56493TD	**2813.00**

▲ 30 mA is instantaneous only, except for RH99M and RH99P models. Their suffix TD indicates time delay at 30 mA. For models with no time delay (IEC compliant) consult catalog 0972CT0401.

Table 7.127: Sensors for Vigirex Ground-Fault Relays

Sensors	Type	Maximum Current♦	Inside Diameter		Cat. No.	$ Price
			in.	mm		
Closed Toroids, Type A	TA30 PA50 IA80 MA120 SA200 GA300	65 A 85 A 160 A 250 A 400 A 630 A	1.18 1.97 3.15 4.72 7.87 11.81	30 50 80 120 200 300	50437 50438 50439 50440 50441 50442	**375.00** **488.00** **615.00** **833.00** **1253.00** **2295.00**
Vigirex Sensor Iron Rings (Optional)	TA30 PA50 IA80 MA120	65 A 85 A 160 A 250 A	0.79 1.58 2.76 4.33	20 40 70 110	56055 56056 56057 56058	**56.00** **59.00** **62.00** **83.00**
Split toroids, Type OA	POA■ GOA■	85 A 250 A	1.81 4.33	46 110	50485 50486	**1718.00** **3015.00**
Rectangular Sensors	280 x 115 470 x 160	1600 A 3200 A	11.02 x 4.53 18.50 x 6.30	280 x 115 470 x 160	56053 56054	**5333.00** **7088.00**

■ POA and GOA are not UL recognized
♦ Use as a guideline for sizing wire through sensor.

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Optional GFM25CT

GFM250

Micrologic™ Add-on Ground-Fault Module (GFM)

The Micrologic Ground-Fault Module (GFM) is a UL Listed/CSA Certified circuit breaker accessory which protects equipment from damage caused by ground faults. It is an add-on module which, when connected to a PowerPact H- or J-frame thermal-magnetic circuit breaker only, provides ground-fault sensing and ground-fault relay functions.

HD/JD ground-fault modules feature:

- Adjustable ground-fault pickup levels
- Adjustable ground-fault time delays
- Integral ground fault push-to-test feature
- Ground-fault indicator (mechanical for local, contacts for remote)
- All GFMs are supplied for I-Line™ mounting as standard, easily convertible to unit mount by removing the I-Line bracket
- Fault-powered (through the sensing current transformer) for electronics, shunt trip, and integral test feature. Meets NEC 230.95(C)
- A 12 Vdc shunt trip module (Catalog No. S29382) is required in the circuit breaker. This may be field installed or factory installed when the circuit breaker is ordered with an -SN suffix.
- UL 1053 — Ground-fault Sensing and Relaying Equipment

The GFM system requires the following:

- H-frame (15–150 A) or J-frame (150–250 A) molded case circuit breaker
- Shunt trip is required for the function of the GFM (may be factory-installed or field-installed)
- Bus bar connection (terminal nut inserts) for OFF end of circuit breaker
- Optional neutral current transformer, catalog number GFM25CT (must be ordered for 4-wire applications)

NOTE: *Ground-fault modules cannot be used for alarming only.*

Table 7.128: Module/Enclosure Selection Chart▲

Companion Circuit Breaker Prefix	Cat. No.■	I-Line Switchboard	Ground-fault Pickup Adjustment Range	GFM $ Price
HD, HG, HJ, HL	GFM150HD	LA	20–100 A	**4250.00**
JD, JG, JJ, JL	GFM250JD	LA	40–200 A	**4250.00**
Accessories				
H & J	GFM25CT	Optional Neutral Current Transformer (required for 4-wire loads)		**375.00**

▲ At 250 A, the GFM250JD can be used with 80% rated circuit breakers only.
■ See Supplemental Digest page 3-37 for additional GFMs.

I-Line™ J-Frame with ELM installed

Earth Leakage Module (ELM) for PowerPact H- and J-Frame MCCBs

The Earth Leakage Module (ELM) is an add-on module which, when connected to a PowerPact H- or J-frame MCCB, provides low-level ground-fault sensing and ground-fault relay functions.

Because these ELMs are highly sensitive (30 mA to 3 A), they provide much greater protection than GFMs (20 Amps to 200 Amps sensitivity). The ELMs provide greater protection of control circuits and other sensitive equipment. The associated circuit breaker must have a 48 Vdc shunt trip, which may be field-installed (kit S29392) or factory-installed (suffix –SP) in the H- or J-Frame circuit breaker.

Add-on Earth Leakage Module (ELM) Features:

- Adjustable ground-fault pickup levels as low as 30 mA
- Adjustable ground-fault time delays from instantaneous to 500 msec (Time delay can be applied to the 30 mA setting)
- Integral ground fault push-to-test feature
- Ground-fault indicator (LED for local status; contacts for remote indication)
- All ELMs are supplied for I-Line™ mounting and are easily convertible to unit-mount by removing the I-Line brackets
- Three poles; 240 to 600 Vac maximum: 3-wire applications only (no neutral)
- Line-power obtained through internal bus to provide power for electronics, shunt trip, and integral test feature.
- A shunt trip is required in the circuit breaker; it may be field-installed or factory-installed in the PowerPact H and J circuit breakers.
- UL 1053 – Ground-fault Sensing and Relaying Equipment

Table 7.129: ELM Selection Chart♦

Companion Circuit Breaker★		Enclosure Space Required I-Line Switchboard	Pick-Up Adjustment Range	Catalog Number	$ Price
Prefix	Size				
HD, HG, HJ, HL	15–150 A	LA	30 mA–3 A	ELM150HD	**4500.00**
JD, JG, JJ, JL	150–250 A	LA	30 mA–3 A	ELM250JD	**4650.00**

♦ At 250 A, the ELM250JD can be used with 80% rated circuit breakers only.
★ For Factory Installation of ELM Module: For termination designation (3rd letter of catalog number) use ONLY "M". Add factory installed 48 Vdc shunt trip (suffix SP) to breaker plus suffix VL or VM.
SP – **$717.** adder.
Use VL for H frame – **$4736.** adder.
Use VM for J frame – **$4886.** adder.
Plus the List Price of the H or J breaker.

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Figure 1

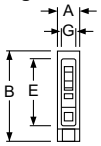


Figure 2

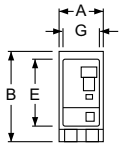
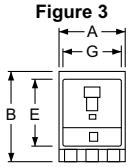


Figure 3



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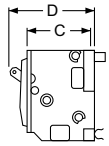


Figure 4

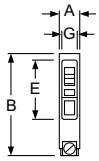
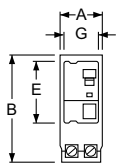
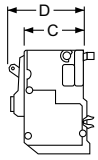


Figure 5



QO-GFI, QO-PL
QO-EPD



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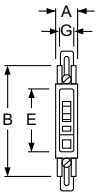


Figure 7

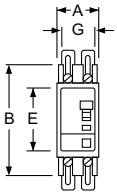
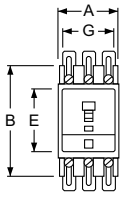


Figure 8



QOU, QYU
Low Ampere

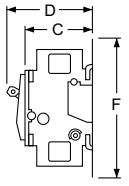


Figure 9
QO-PLPS

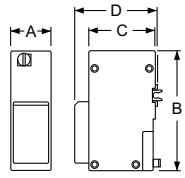


Figure 10

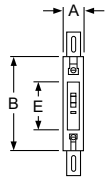


Figure 11

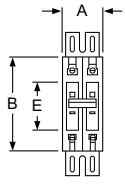
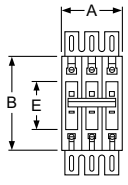
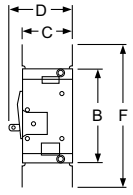


Figure 12



QOU
High Ampere



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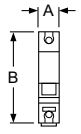


Figure 14

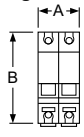


Figure 15

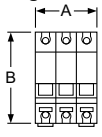
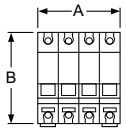


Figure 16



C60

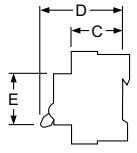


Figure 17

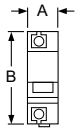


Figure 18

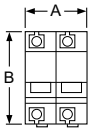


Figure 19

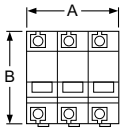
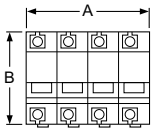


Figure 20



C120

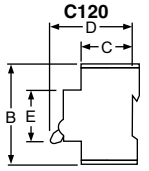


Figure 21

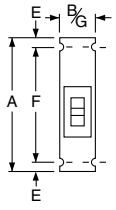


Figure 22

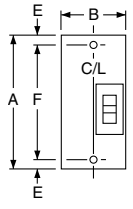


Figure 23

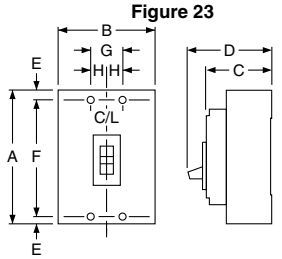


Figure 24

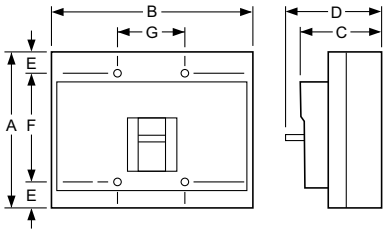


Table 7.130: QO™, QOU, Multi 9™ Circuit Breakers

Circuit Breaker Cat. No. Prefix	Poles	Fig. No.	Dimensions—Inches						
			A	B	C	D	E	F	G
QO, QOB	1	1	0.75	3.00▲	2.31	2.91	2.25	—	0.59
	2	2	1.50	3.00▲	2.31	2.91	2.25	—	1.34
	3	3	2.25	3.00▲	2.31	2.91	2.25	—	2.09
QOB-VH 150 A QOB-VH 110–150 A	2	2	3.0	5.72	2.53	4.90	3.78	—	2.85
	3	3	4.50	5.72	2.53	4.90	3.78	—	4.35
QO-PL QO-GFI QO-EPD	1	4	0.75	4.12■	2.31	2.91	2.25	—	0.59
	2	5	1.50	4.12■	2.31	2.91	2.25	—	1.34
	3	5	2.25	4.12■	2.31	2.91	2.25	—	2.09
QOU QYU Low Ampere	1	6	0.75	4.05♦	2.38	2.98	2.25	5.00★	0.62
	2	7	1.50	4.05♦	2.38	2.98	2.25	5.00★	1.37
	3	8	2.25	4.05★	2.38	2.98	2.25	5.00△	2.12
QOU High Ampere	1	10	0.75	4.45	2.37	2.96	2.25	6.78	—
	2	11	1.50	4.45	2.37	2.96	2.25	6.78	—
	3	12	2.25	4.45	2.37	2.96	2.25	6.78	—
Multi 9™ C60	1	13	0.71	3.19	1.73	2.76	1.77	—	—
	2	14	1.42	3.19	1.73	2.76	1.77	—	—
	3	15	2.13	3.19	1.73	2.76	1.77	—	—
	4	16	2.84	3.19	1.73	2.76	1.77	—	—
QO-PLPS Power Supply	2	9	1.45	4.35	2.42	3.11	—	—	—

▲ 35–70 A is 3.12 in; 80–100 A 2P and 70–100 A 3P are 3.50 in.
■ QO-PL is 4.55 in.
♦ 80–100 A 1P and 80–125 A 2P are 4.45 in
★ 80–100 A 1P and 80–125 A 2P are 6.78 in.
▼ 70–100 A 4.45 in.
△ 70–100 A is 6.78 in.

Table 7.131: QB, QD, QG, QJ, Q4, FA, FI, KI, LA, LI, LX, LXI Circuit Breakers

Circuit Breaker Cat. No. Prefix	Poles	Fig. No.	Dimensions—Inches							
			A	B	C	D	E	F	G	H
QB, QD, QG, QJ	2	22	6.47	3.00	3.02	3.93	□	4.25	—	—
	3	23	6.47	4.50	3.02	3.93	□	4.25	1.50	0.75
FAL, FHL	1	21	6.00	1.50	3.16	4.13	0.44	5.13	1.50	—
	2	22	6.00	3.00	3.16	4.13	0.44	5.13	—	—
	3	23	6.00	4.50	3.16	4.13	0.44	5.13	1.50	0.75
FIL, KIL	2 & 3	23	8.00	4.50	3.66	4.75	0.44	7.13	1.50	0.75
Q4L, LAL, LHL	2 & 3	23	11.00	6.00	4.06	5.84	0.88	9.25	2.00	1.00
LIL, LXIL	2 & 3	24	11.86	7.50	5.48	6.74	0.55	10.75	2.50	

□ Dimensions E are 1.59 in at ON end and 0.63 in at OFF end.

Table 7.132: Shipping Weights◊

Frame Size	Approx. Shipping Weight (Lbs.)	Frame Size	Approx. Shipping Weight (Lbs.)
FAL, FHL 1P	2	KIL	9
FAL, FHL 2P	3	LAL, LHL	15
FAL, FHL 3P	5	LIL LXIL	25
FIL	8	Q4L	15
QB, QD, QG, QJ	4		

◊ All weights are for 3P circuit breakers unless otherwise noted.

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Figure 25

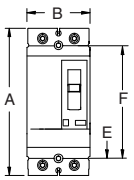


Figure 26

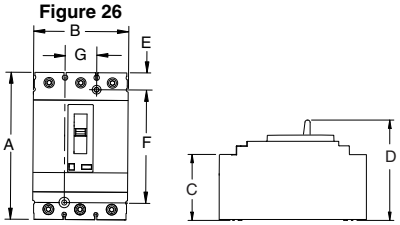


Figure 27

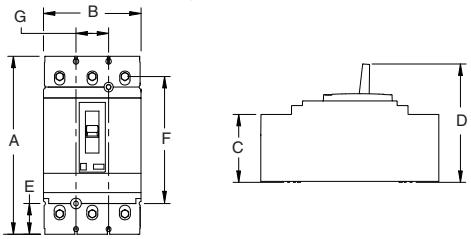


Figure 28

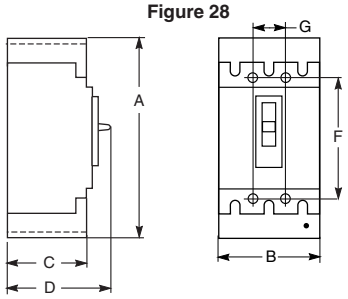


Figure 29

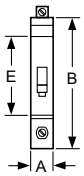


Figure 30

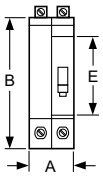
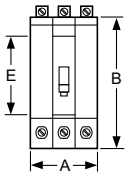


Figure 31



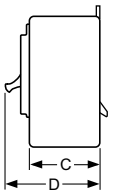


Figure 32

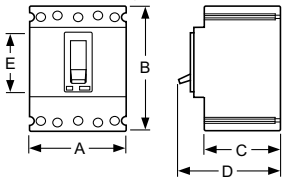


Figure 33

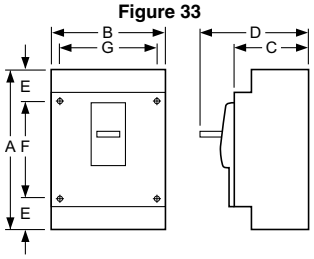


Figure 34

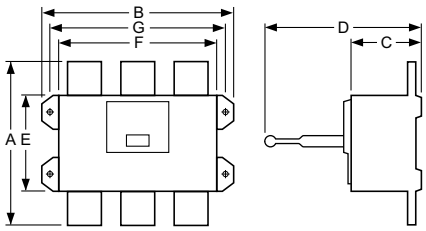


Table 7.133: HD, HG, HJ, HL, HR, JD, JG, JJ, JL, JR, LG, LJ, LL, and LR Circuit Breakers

Circuit Breaker Cat. No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches						
			A	B	C	D	E	F	G
HD, HG, HJ, HL, HR	2▲	25	6.40	2.74	2.87	4.36	0.74	4.92	—
	3	26	6.40	4.12	2.87	4.36	0.74	4.92	1.38
JD, JG, JJ, JL, JR	3	27	7.52	4.12	2.87	5.00	1.30	4.92	1.38
LG, LJ, LL, LR	3	28	13.38	5.51	3.75	6.61	2.22	7.87	1.77

▲ Only HD and HG are in 2P module, HJ, HL and HR 2P are in 3P module.

Table 7.134: ED, EG, and EJ Circuit Breakers

Circuit Breaker Cat. No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches				
			A	B	C	D	E
ED, EG, EJ	1	29	0.98	5.66	3.09	4.05	3.32
ED, EG, EJ	2	30	1.96	5.66	3.09	4.05	3.32
ED, EG, EJ	3	31	2.94	5.66	3.09	4.05	3.32
GJ	3	32	3.54	4.72	2.76	3.94	2.20

Table 7.135: MG, MJ, PG, PJ, PL, RG, RJ and RL Circuit Breakers

Circuit Breaker Cat. No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches						
			A	B	C	D	E	F	G
MG, MJ (800 A and below)	2, 3	33	12.86	8.27	5.77	8.05	2.49	7.87	7.83
PG, PJ, PK, PL (1000–1200 A)	2, 3	33	16.16	8.27	5.77	8.05	4.19	7.87	7.83
RG, RJ, RL	2, 3	34	16.24	16.54	6.63	14.49	8.73	14.25	15.35

Table 7.136: Shipping Weights▲

Frame Size	Approx. Shipping Weight (Lbs.)	Frame Size	Approx. Shipping Weight (Lbs.)
HD, HG, HJ, HL 2P	4	JD, JG, JJ, JL, JR	5
HD, HG, HJ, HL, HR 3P	5	LD, LG, LJ, LL, LR	14
ED, EG, EJ 1P	2	MG, MJ	29
ED, EG, EJ 2P	3	PG, PJ, PK, PL	32
ED, EG, EJ 3P	4	RG, RJ, RK, RL (Without RLTB)	52

▲ All weights are for 3P circuit breakers unless otherwise noted.

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FA100S


FA100RB


FA100DS

- Circuit breaker enclosures are UL Listed, CSA Certified and are suitable for use as service equipment except as footnoted.
- The short circuit rating of an enclosed circuit breaker is equal to the rating of the circuit breaker installed, except as footnoted.
- Circuit breakers are ordered and shipped separately for field installation.
- For enclosure accessories and dimensions refer to page 7-58.
- See Supplemental Digest page 3-35 for NEMA 7 and 9 enclosures for FAL circuit breakers.

Table 7.137: Circuit Breaker Enclosures

Circuit Breaker			Enclosure					
Cat. No. Prefix	Rating	Poles	Cat. No.	$ Price	Cat. No.	$ Price	Cat. No.	$ Price
			NEMA 1 Flush		NEMA 1 Surface		NEMA 3R▲	
FAL, FHL, FCL	15–100 A	1, 2, 3	FA100F	189.00	FA100S	189.00	FA100RB	500.00
QBL, QDL, QGL, QJL	100–200 A	2	—	—	Q22200NS■	176.00	Q22200NRB■	380.00
	100–225 A	2, 3	Q23225NF■	218.00	Q23225NS■	218.00	Q23225NRB■	417.00
HDL, HGL, HJL, HLL	15–150 A	2, 3	J250F♦★▼	285.00	J250S♦★▼	285.00	J250R♦★▼	840.00
JDL, JGL, JJL, JLL	150–250 A	2, 3						
HDL	15–100 A	3	—	—	HD100S△□♦▼☆	285.00	—	—
JDL	150–250 A	3	—	—	JD250S☆□△♦▼	285.00	—	—
LAL, LHL, Q4L	125–400 A	2, 3	LA400F	356.00	LA400S	356.00	LA400R	1655.00
LAL	125–400 A	3	—	—	LA400LS□☆w	356.00	—	—
MGL, MJL, PGL, PJL, PKL, PLL	300–800 A	2, 3	—	—	M800S▽◒	783.00	M800R▽♦	2159.00
PGL, PJL, PKL, PLL✱	250–1200 A	2, 3	—	—	P1200S◒	1260.00	P1200R♦	2790.00
			NEMA 4, 4X, 5, 3, 3R Stainless Steel (Hubs—See page 3-9)		NEMA 12/3R, 12K (Hubs—See page 3-9)			
					With Knockouts (NEMA 12K)		Without Knockouts◑ (NEMA 12/3R, 5)	
FAL, FHL, FCL	15–100 A	1, 2, 3	FA100DS	1431.00	FA100A	351.00	FA100AWK	335.00
HDL, HGL, HJL, HLL	15–150 A	2, 3	J250DS♦★▼	3405.00	—	—	J250AWK♦★▼	582.00
JDL, JGL, JJL, JLL	150–250 A	2, 3						
KIL♦, KCL	110–250 A	2, 3	IK250DS	5238.00	—	—	IK250AWK	878.00
LAL, LHL, Q4L	125–400 A	2, 3	LA400DS	5673.00	—	—	LA400AWK	903.00
LDL, LGL, LJL, LLL, LRL	250–600 A	3	—	—	—	—	L600AWKx	3728.00
LDL, LGL, LJL, LLL, LRL	250–600 A	3	—	—	—	—	L600AWKVWy	3928.00
LGL, LLL, LRL	400–600 A	3	—	—	—	—	L600AWKMCz	3728.00
MGL, MJL, PGL, PJL, PKL, PLL	300–800	2, 3	M800DS✪	10125.00	—	—	M800AWK✪	2459.00
PGL, PJL, PKL, PLL✱	600–1200	2, 3	—	—	—	—	P1200AWK✪	5700.00
			Nema 7‡ Cast Aluminum		Nema 9u Cast Aluminum			
JDL, JGL†●v	150–250 A	2, 3	J225X	4083.00	J225Y	2834.00		

▲ Enclosures with NRB or RB suffix have provisions for 3/4 in. through 2-1/2 in. bolt-on hubs in top endwall. Enclosures with R suffix have blank endwalls and require field cut opening. For details and hub catalog numbers see page 3-9.
■ Not CSA Certified.
♦ Accepts standard rated 80% breakers. Not rated at 100%.
★ Maximum short circuit rating is 25 kAIR at 600 Vac, 65 kAIR at 480 Vac, 125 kAIR at 240 Vac.
▼ Earth Leakage Module and Ground Fault Module are not compatible with these enclosures.
△ Maximum short circuit rating is 25 kAIR, 240 Vac.
□ Order service ground kit PKOGTA2 if required.
◊ Maximum short circuit rating is 18 kAIR, 480 Vac and 240 Vac.
☆ Copper wire only.
▽ When using a CT in the M800S and R enclosure the unit will no longer accommodate a 200% neutral solution.
◒ CE certified per IEC60439-1, IP20D, PE type TN-C or TN-S
✱ Accepts MGL or MJL standard rated (80%) breakers. Accepts PGL, PJL or PLL circuit breakers rated 80% (1200 A maximum) or 100% rated breakers, (800A maximum).
♦ CE certified per IEC60439-1, IP24D, PE type TN-C or TN-S
◑ Suitable for rainproof NEMA 3R application by removing drain screw from bottom endwall.
✪ CE certified per IEC60439-1, IP56, PE type TN-C or TN-S
◪ LEL 100% rated circuit breaker except for 600 A sensor.
♦ Short circuit rating is 100 k AIR at 480 Vac maximum.
‡ NEMA 7—Indoor Hazardous Locations—Division 1 and 2, Class I, Groups C and D; Class II, Groups E, F,and G; Class III.
† 80% rated circuit breakers only; SCCR 65 kA @ 240 Vac, 25 kA @ 480 Vac, 18 kA @ 600 Vac.
● Not UL Listed due to wire bending space.
u NEMA 9—Indoor Hazardous Locations—Division 1 and 2, Class II, Groups E, F,and G; Class III.
v Has a tapped 2-1/2 in. conduit opening on top and bottom end wall
w Short circuit current rating is 30 k AIR at 480 Vac.
x Product also accepts PowerPact L Frame Motor Protector Circuit Breakers with suffix M38X.
y Viewing Window factory installed.
z Product accepts PowerPact L-Frame Automatic Molded Case Switches.

316 Grade Stainless Steel Circuit Breaker Enclosures—NEMA 3, 3R, 4X, 5 and 12

Type 316 stainless steel circuit breaker enclosures offer superior corrosion resistance to a wider range of chemicals than Type 304 stainless steel enclosures. Type 316 better resists chloride and is often used in marine, waste treatment and transportation applications. Use watertight hubs from Section 3 page 10 of Digest 176. For other accessories reference Table 7.142 and Table 7.143. For dimensional information, reference Table 7.144.

Table 7.138: 316 Grade Stainless Steel CIrcuit Breaker Enclosures

Circuit Breaker▲■			NEMA 3, 3R, 4X, 5 and 12	
Cat. No. Prefix...Suffix	Ampere Rating	Poles	Enclosure Cat. No.	$ Price
HDL, HGL, HJL, HLL	15–150 A	2, 3	J250SS	4698.00
JDL, JGL, JJL, JLL	150–250 A	2, 3		
MGL, MJL, PGL, PJL PKL, PLL	300–800 A	2, 3	M800SS	13972.00

Table 7.139: DC CIrcuit Breaker Enclosures for MA and MH DC-Rated Circuit Breakers

Circuit Breaker▲■			NEMA 1 Surface Enclosure▲▲	
Cat. No. Prefix...Suffix	Ampere Rating	Poles	Enclosure Cat. No.	$ Price
MAL, MHL	125–1000 A	2, 3	MA1200S	1355.00

▲▲ UL Listed Only
▲■ Use 500 Vdc or 250 Vdc rated circuit breakers only.

Accessories . . . . . Page 7-58
Dimensions. . . . . Page 7-58

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Table 7.140: Enclosures for Walking Beam Manually Operated Mechanical Interlock Circuit Breakers (UL Listed)▲

Circuit Breaker			NEMA 1 Surface■		NEMA 3R ■♦	
Cat. No. Prefix...Suffix	Ampere Rating	Poles	Enclosure Cat. No.	$ Price	Enclosure Cat. No.	$ Price
FAL...WB, FHL...WB	15–250 A	2, 3	KA250SWB	**1040.00**	KA250RWB	**1827.00**

▲ Catalog number in table is enclosure only. For complete installation, the following must be ordered separately: WB Circuit Breakers (qty. 2, Supplemental Digest page 3-27), Walking Beam Assembly (Supplemental Digest page 3-27), Mounting Pan (Supplemental Digest) page 3-27, Neutral (page 7-56) and Service Ground Kit (page 7-58).
■ Enclosure has blank top endwall.
♦ For applications above 200 A requiring a neutral, use copper wire only.

Enclosed Motor-Operated Molded Case Circuit Breakers

For information on Enclosed Motor-Operated Molded Case Circuit Breakers see the Supplemental Digest page 3-35.

Enclosed Molded Case Switches

For ordering information on molded case switches see page 7-34. For ordering information on enclosed molded case switches, see Supplemental Digest 175 Section 3-36.

Enclosed Walking Beam Mechanical Interlock

NOTE: *Contact local Field Office for catalog number prior to quoting or placing an order.*

Industrial molded case circuit breakers with walking beam mechanical interlocks are available in NEMA 1 and 3R construction as completely enclosed device. Walking beam mechanical interlock is available manually operated or electrically operated using (2) 120 Vac motor operators. Not UL Listed.

Enclosed walking beam mechanically interlocked circuit breaker.

- Specify circuit breaker catalog numbers
- Specify manually or electrically operated (electrically operated factory installed only)
- Specify enclosure type (NEMA 1 or 3R)
- Specify if neutrals are required. (Same price)

Table 7.141: Enclosed Walking Beam Mechanical Interlock

Circuit Breaker Cat. No. Prefix (Standard Thermal-Magnetic Only)	$ Price▲			
	Manually Operated		Electrically Operated	
	NEMA 1	NEMA 3R	NEMA 1	NEMA 3R
FAL—240 V 100 A	—	—	**5783.00**	**3675.00**
FAL—480 V 100 A	—	—	**6311.00**	**6896.00**
FAL—600 V 100 A	—	—	**6879.00**	**7446.00**
FHL—600 V 100 A	—	—	**8691.00**	**9407.00**

▲ Price includes (2) walking beam 3P circuit breakers, walking beam operator and mounting pan, (2) neutrals (if specified), and (2) motor operators (if specified) factory assembled in specified enclosure.
■ Not available factory assembled. Refer to page 7-56 for merchandise enclosure.

NOTE: *Contact local Field Office for catalog number prior to quoting or placing an order.*

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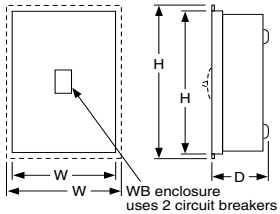
Table 7.142: Insulated Groundable Neutral Assembly

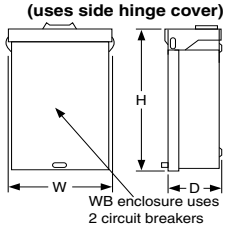
Circuit Breaker		Neutral Assembly For Use With						Terminal Lug Data—Total Available (Line plus Load) AWG/kcmil
Cat. No. Prefix	Ampere Rating	NEMA 1 & 3R		NEMA 4, 4X, 5, 12 & 12K		NEMA 7 & 9		
		Cat. No.	$ Price	Cat. No.	Price	Cat. No.	$ Price	
FAL, FHL, FCL	100	SN100FA	**72.00**	SN100FA	**72.00**	—	—	(4) 14–1/0 Cu or (4) 12–1/0 Al
FAL, FHL, FIL	100	—	—	—	—	100SNA	**150.00**	FA060X/Y—(1) 14– 6 Cu, plus (1) 14–4 Cu FA100X/Y—(1) 14– 3 Cu, plus (1) 14–4 Cu
HDL,HGL,HJL,HLL	15–100	SN100FA	**72.00**	SN100FA	**72.00**	—	—	(4) 14–1/0 Cu or (4) 12–1/0 Al
HDL,HGL,HJL,HLL	125-150	SN400LA	**251.00**	SN400LA	**251.00**	225SNA	**198.00**	(2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu
JDL,JGL,JJL,JLL	150–250	SN400LA	**251.00**	SN400LA	**251.00**	—	—	(2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu
FAL...WB, FHL...WB	200	Requires (2) SN20A plus (1) SN20NI link	**(2) @$200.00 ea plus (1) @$27.60 ea**	—	—	—	—	(4) 6–250 Al/Cu, plus (2) 14–1/0 Al/Cu
LDL, LGL, LJL, LLL, LRL	250–400	—	—	SN400LA	**251.00**	—	—	(2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu
				SNC400LX	**1152.00**			(2) 2–600 Cu, plus (2) 2–4/0 Cu
LDL, LGL, LJL, LLL, LRL	250–600	—	—	SN800LX	**1506.00**	—	—	(4) 2–600 Cu, plus (1) 2–4/0 Cu
				SN1000MA	**365.00**			(6) 3/0–500 Al/Cu, plus (1) 1–4/0 Al/Cu
LDL, LGL, LJL, LLL, LRL	250–600	—	—	SNC600LXCT	**2506.00**	—	—	(4) 2–600 Cu, plus (2) 2–4/0 Cu
				SN600LXCT	**1065.00**			(4) 3/0–500 Al/Cu, plus (2) 2–4/0 Al/Cu
LDL, LGL, LJL, LLL, LRL	250–600	—	—	SNC800LX♦	**1506.00**	—	—	(4) 2–600 Cu, plus (1) 2–4/0 Cu
MGL, MJL★	300–800	AL800SN	**365.00**	AL800SN	**365.00**	—	—	(6) 3/0–500 Al/Cu, plus (2) 6–250 Al/Cu
PGL, PJL, PKL, PLL▼	250–1200	SN1200	**1034.00**	SN1200	**1034.00**	—	—	(8) 3/0–500 Al/Cu, plus (2) 350 4–300 Al/Cu

♦ All Cu neutral assembly.
★ For NEMA 1 and 3R 200% neutral applications order Jumper kit SN800SNI and 2 of kit SN1200. (No 200% neutral is available for NEMA 4X or 12 devices.)
▼ For applications with integral ground fault protection order Neutral Mounting Kit S33576MK and Neutral CT S33576 (400–1200 A only).

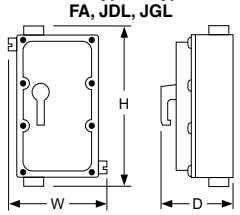
NEMA Type 1
Q2, FA, J, SWB
LA, MG, PG



NEMA Type 3R
Q2, FA, LA, MG, J, PG, RWB
(uses side hinge cover)



NEMA Type 7, Type 9
FA, JDL, JGL



NEMA Type 4, 4X, 5, 12, 12K
IK, FA, J, LA, LX, MG, PG

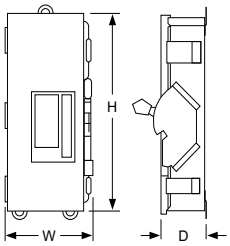


Table 7.143: Service Ground Kits

Circuit Breaker Cat. No. Prefix	Ground Bar Cat. No.	Number of Terminals	Conductors Per Terminal	Wire Range AWG/kcmil	$ Price	
					Field-Installable	Factory-Installed
QBL, QDL, QGL, QJL FAL, FHL, FCL, FIL, FAL...WB, FHL...WB KCL, KIL, LAL, LHL, Q4L	PKOGTA2△	2	1	10–2/0 Cu or 6–2/0 Al	**56.00**	**191.00**
HDL,HGL,HJL,HLL,JDL,JGL,JJL,JLL	PKOGTJ250	2	1	6–300 Al/Cu	**75.00**	**195.00**
LDL, LGL, LJL, LLL, LRL MGL, MJL PGL, PJL, PKL, PLL	PKOGTA4	4	1	6–250 Al or Cu	**213.00**	**263.00**

△ Quantity (2) required if ground wires are run in parallel.

Table 7.144: Dimensions

Cat. No.	Approximate Dimension							
	Series	H		W		D	
		in.	mm	in.	mm	in.	mm
FA100A, AWK	E2	19.50	495	9.13	232	4.88	124
FA100DS	E2	19.50	495	9.13	232	4.88	124
FA100F	E2	19.50	495	9.88	251	4.13	105
FA100RB	E2	18.00	457	8.88	226	4.88	124
FA100S	E2	18.13	461	8.63	219	4.13	105
IK250AWK	E2	42.25	1073	13.88	353	7.50	191
IK250DS	E2	42.25	1073	13.88	353	7.50	191
HD100S	A1	17.00	431.8	7.90	200.7	4.75	120.7
J250F	A01	32.40	823	15.40	391	6.00	152
J250S	A01	31.36	797	14.36	365	6.00	152
J250R	A01	31.05	789	14.47	368	6.28	160
J250DS	A01	32.26	819	9.72	247	7.94	202
J250SS	A01	32.26	819	9.72	247	7.94	202
J250AWK	A01	32.26	819	9.72	247	7.94	202
JD250S	A1	26.40	670.6	8.90	226.1	5.50	139.7
J225X	A1	22.70	577	10.93	278	7.70	196
J225Y	A1	22.70	577	10.93	278	7.70	196
KA250SWB	E2	20.00	508	19.00	483	5.63	143
KA250RWB	E2	20.25	514	19.00	483	7.12	181
L600AWK	A01	57.50	1461	20.38	518	8.25	210
L600AWKVW	A01	57.50	1461	20.38	518	8.25	210
L600AWKMC	A01	57.50	1461	20.38	518	8.25	210

Cat. No.	Approximate Dimension							
	Series	H		W		D	
		in.	mm	in.	mm	in.	mm
LA400AWK	E2	42.25	1073	13.75	349	7.25	184
LA400DS	E2	42.25	1073	13.75	349	7.25	184
LA400F	E2	45.63	1159	16.50	419	6.50	165
LA400R	E2	44.00	1118	15.38	391	7.88	200
LA400S	E2	44.50	1130	15.38	391	6.50	165
LA400LS	A1	27.40	696.0	15.40	391.2	6.625	168.3
M800S	A1	40-3/8	1025.52	21	533.4	9-3/4	247.65
M800R	A1	40-3/8	1025.52	21	533.4	9-3/4	247.65
M800DS	A1	40-7/8	1036.96	20-3/4	527.05	9-1/2	241.3
M800SS	A1	40-7/8	1036.96	20-3/4	527.05	9-1/2	241.3
M800AWK	A1	40-7/8	1036.96	20-3/4	527.05	9-1/2	241.3
P1200S	A1	52-1/8	1323.98	21	533.4	9-3/4	247.65
P1200R	A1	52-1/8	1323.98	21	533.4	9-3/4	247.65
P1200AWK	A1	53	1346.20	20-3/4	527.05	9-1/2	241.3
Q22200NRB	E3	23.38	594	7.63	194	4.75	121
Q22200NS	E3	23.13	588	7.63	194	4.25	108
Q23225NF	E3	26.25	667	9.88	251	4.75	121
Q23225NRB	E3	26.25	667	9.88	251	5.50	140
Q23225NS	E3	26.25	667	9.88	251	4.75	121

See Supplemental Digest 3-37 and 3-38 for:

- Special paint
- Stainlee steel fronts
- Pilot lights, push buttons
- Lock-on SPL0
- Key interlock systems
- Legend plates

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Photovoltaic Circuit Breakers and Switches

600 Vdc and 1000 Vdc PV Circuit Breakers and Switches

Class **611** / Refer to Catalog **0611CT1302**

The UL listed thermal-magnetic molded case circuit breakers and switches shown below are specifically designed for use in PV applications, rated at 50°C, offering grounded or ungrounded configurations.

The products are fully tested and calibrated under the PV UL489B standard.

The products come ready to install, including specially designed serial connectors for optimal thermal response, and adapted terminal covers for optimal isolation. Circuit Breakers come 100% rated for ease of use and selection.

These two new frames are fully compatible with the current line of PowerPact accessories, from aux contacts and shunt trips to motor operators and rotary handles.

Table 7.145: PV Molded Case Circuit Breakers

Ampere Rating	600 Vdc (3 poles)				1000 Vdc (4 poles)			
	Ungrounded		Grounded		Ungrounded		Grounded	
	Part Number	$ Price	Part Number	$ Price	Part Number	$ Price	Part Number	$ Price
50	TGL36050L	**911.00**	TGL36050K	**984.00**	TBL41050L	**1212.00**	TBL41050K	**1309.00**
60	TGL36060L	**911.00**	TGL36060K	**984.00**	TBL41060L	**1212.00**	TBL41060K	**1309.00**
70	TGL36070L	**1013.00**	TGL36070K	**1094.00**	TBL41070L	**1212.00**	TBL41070K	**1309.00**
80	TGL36080L	**1013.00**	TGL36080K	**1094.00**	TBL41080L	**1212.00**	TBL41080K	**1309.00**
100	TGL36100L	**1125.00**	TGL36100K	**1215.00**	TBL41100L	**1347.00**	TBL41100K	**1455.00**
125	TGL36125L	**1250.00**	TGL36125K	**1350.00**	TBL41125L	**1496.00**	TBL41125K	**1616.00**
150	TGL36150L	**1250.00**	TGL36150K	**1350.00**	TBL41150L	**1496.00**	TBL41150K	**1616.00**
175	TGL36175L	**1438.00**	TGL36175K	**1553.00**	TBL41175L	**1721.00**	TBL41175K	**1859.00**
200	TGL36200L	**1438.00**	TGL36200K	**1553.00**	TBL41200L	**1721.00**	TBL41200K	**1859.00**
225	UGL36225L	**1703.00**	UGL36225K	**1839.00**	UCL41225L	**2044.00**	UCL41225K	**2207.00**
250	UGL36250L	**1892.00**	UGL36250K	**2043.00**	UCL41250L	**2271.00**	UCL41250K	**2453.00**
300	UGL36300L	**2270.00**	UGL36300K	**2451.00**	UCL41300L	**2611.00**	UCL41300K	**2820.00**
350	UGL36350L	**2270.00**	UGL36350K	**2451.00**	UCL41350L	**2611.00**	UCL41350K	**2820.00**
400	UGL36400L	**2306.00**	UGL36400K	**2490.00**	UCL41400L	**2765.00**	UCL41400K	**2986.00**
450	UGL36450L	**2536.00**	UGL36450K	**2739.00**	UCL41450L	**3041.00**	UCL41450K	**3284.00**
500▲	N/A	. . .	UGL36500G	**2739.00**	UCL41500J	**3041.00**	UCL41500G	**3284.00**

▲ 500 A 80% rated.

Table 7.146: PV Circuit Breaker Max. Interrupting Ratings

Frame	600 Vdc	1000 Vdc
T-Frame	10 kA	3 kA
U-Frame	10 kA	5 kA

Table 7.147: Circuit Breaker Numbering

Brand	Frame	Rating	Termination	Poles	Voltage	Amperage			Grounding	Suffix Code		Suffix Code	
	T	G	L	3	6	0	5	0	G	A	B	S	A

Brand
Blank: Schneider Electric

Frame
T: T-Frame
U: U-Frame

Ratings
B: 3 kA
C: 5 kA
G: 10 kA

Terminations
L: Lugs Line/Load Side
F: Bus Bar
S: Rear Connected

Poles
3: 3P
4: 4P

Voltage
6: 600 Vdc
1: 1000 Vdc

Amperage
050: 50 A
060: 60 A
070: 70 A
080: 80 A
100: 100 A
125: 125 A
150: 150 A
175: 175 A
200: 200 A
225: 225 A
250: 250 A
300: 300 A
350: 350 A
400: 400 A
450: 450 A
500: 500 A

Grounding
G: Grounded, 80% rated (500 A Only)
J: Ungrounded, 80% rated (500 A Only)
K: Grounded, 100% rated
L: Ungrounded, 100% rated

Accessory Suffix Cells (See Table 7.151 to Table 7.155)

Accessory Suffix Cells (See Table 7.151 to Table 7.155)

Table 7.148: PV Molded Case Non-Automatic Switches

Ampere Rating	600 Vdc (3 poles)				1000 Vdc (4 poles)			
	Ungrounded		Grounded		Ungrounded		Grounded	
	Part Number	$ Price	Part Number	$ Price	Part Number	$ Price	Part Number	$ Price
100	TBL36000JZ10	**872.00**	TBL36000GZ10	**934.00**	TBL41000JZ10	**1048.00**	TBL41000GZ10	**1122.00**
150	TBL36000JZ15	**960.00**	TBL36000GZ15	**1028.00**	TBL41000JZ15	**1156.00**	TBL41000GZ15	**1237.00**
200	TBL36000JZ20	**1104.00**	TBL36000GZ20	**1182.00**	TBL41000JZ20	**1332.00**	TBL41000GZ20	**1426.00**
250	UDL36000JZ25	**1455.00**	UDL36000GZ25	**1557.00**	UDL41000JZ25	**1748.00**	UDL41000GZ25	**1870.00**
300	UDL36000JZ30	**1676.00**	UDL36000GZ30	**1794.00**	UDL41000JZ30	**2012.00**	UDL41000GZ30	**2153.00**
400	UDL36000JZ40	**1876.00**	UDL36000GZ40	**2007.00**	UDL41000JZ40	**2254.00**	UDL41000GZ40	**2412.00**
500	UDL36000JZ50	**2401.00**	UDL36000GZ50	**2569.00**	UDL41000JZ50	**2711.00**	UDL41000GZ50	**2901.00**

Table 7.149: PV Switches Withstand Ratings

Frame	600/1000 Vdc
T-Frame	3 kA
U-Frame	7.5 kA

Table 7.150: Switch Numbering

Brand	Frame	Rating	Termination	Poles	Voltage	Amperage			Grounding	Trip System		Suffix Code		Suffix Code	
	T	D	L	3	6	0	0	0	G	Z	1	0	A	S	A

Brand
Blank: Schneider Electric only

Frame
T: T-Frame
U: U-Frame

Ratings
B: 3 kA
D: 7.5 kA

Terminations
L: Lugs Line/Load Side
F: Bus Bar
S: Rear Connected

Poles
3: 3P
4: 4P

Voltage
6: 600 Vdc
1: 1000 Vdc

Amperage
000: Switch

Trip System—##
(Z: Non-Automatic Switch)
(##: Amerage Rating)
Z10: 100 A
Z15: 150 A
Z20: 200 A
Z25: 250 A
Z30: 300 A
Z40: 400 A
Z50: 500 A

Grounding
G: Grounded, 80% rated
J: Ungrounded, 80% rated

Accessory Suffix Cells (See Table 7.151 to Table 7.155)

Accessory Suffix Cells (See Table 7.151 to Table 7.155)

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Table 7.151: Auxiliary Switches

Contacts	Factory-Installed Suffix	Field-Installable Kit No.	Kit Qty.	$ Price
1A/1B Standard	AA	S29450	1	297.00
2A/2B Standard	AB	S29450	2	594.00
3A/3B Standard▲	AC	S29450	3	891.00
1A/1B Low-Level (Gold)	AE	S29452	1	372.00
2A/2B Low-Level (Gold)	AF	S29452	2	744.00
3A/3B Low-Level (Gold)▲	AG	S29452	3	1116.00

▲ U-Frame only.

Table 7.152: Alarm/Overcurrent Trip Switches

Suffix	Switch	Kit No.	Kit Qty.	$ Price
PowerPact T-Frame				
BC	Alarm Switch	S29450	1	297.00
BH	Alarm Switch, Low-Level	S29452	1	372.00
BD	Overcurrent Trip Switch, Standard	S29450	1	338.00
	SDE Actuator	S29451	1	
BJ	Overcurrent Trip Switch, Low-Level	S29452	1	413.00
	SDE Actuator	S29451	1	
BE	Alarm Switch and Overcurrent Trip Switch, Standard	S29450	2	635.00
	SDE Actuators	S29451	2	
BK	Alarm Switch and Overcurrent Trip Switch, Low-Level	S29452	2	785.00
	SDE Actuators	S29451	2	
PowerPact U-Frame				
BC	Alarm Switch	S29450	1	297.00
BH	Alarm Switch, Low-Level	S29452	1	372.00
BD	Overcurrent Trip Switch, Standard	S29450	1	297.00
BJ	Overcurrent Trip Switch, Low-Level	S29452	1	372.00
BE	Alarm Switch and Overcurrent Trip Switch, Standard	S29450	2	594.00
BK	Alarm Switch and Overcurrent Trip Switch, Low-Level	S29452	2	744.00

Table 7.153: Shunt Trips

Voltage	Shunt Trip (MX)		
	Factory-Installed Suffix	Field-Installable Kit No.	$ Price
120 Vac	SA	S29386	717.00
24 Vdc	SO	S29390	717.00
48 Vdc	SP	S29392	717.00
125 Vdc	SR	S29393	717.00

Table 7.154: Rotary Operated Handles

Device		Description	Factory Installed Suffix	T-Frame		U-Frame	
				Field Installable Kit No.	$ Price	Field Installable Kit No.	$ Price
Direct Mounted	Standard Handle Black	Handle Only	RD10	S29337	255.00	S32597	366.00
Door Mounted	Standard Black Handle	Handle Only	RE10	S29338	383.00	S32598	557.00

Table 7.155: Locks

Device	Description	Factory Installed Suffix	T-Frame		U-Frame	
			Field Installable Kit No.	$ Price	Field Installable Kit No.	$ Price
Handle Padlocking Device	Handle Padlock, ON or OFF	YP	S29371	77.00	S32631	122.00

NOTE: *For a complete list of Field installable accessories and details, including also motor operator (electrical only) and locks, refer to accessories information for the PowerPact, J-Frame (compatible with T-Frame) and L-Frame (Compatible with U-Frame). Or consult Photovoltaic offer catalog 0611CT1302.*

Table 7.156: PV Unit Mount Terminal Covers

Choose termination "L" for having the termination kit factory installed with the breaker (Lugs, Term Covers, Serial Connectors)

Frame	Description▲	Poles	Configuration				Field Installable Catalog No.	$ Price
			Ungrounded		Grounded			
			Top	Bottom	Top	Bottom		
T-Frame	Long Terminal Cover (3P)	3	X				S35175	145.00
	Long Terminal Cover (3P/1SC)	3		X	X	X	S35176	145.00
	Long Terminal Cover (4P)	4		X			S35177	162.00
	Long Terminal Cover (4P/2SC)	4	X		X		S35178	162.00
	Long Terminal Cover (4P/1SC)	4				X	S35179	162.00
U-Frame	Long Terminal Cover (3P)	3	X				S32593	185.00
	Extended Term Cover (3P/1SC)	3		X	X	X	S38291	205.00
	Long Terminal Cover (4P)	4		X			S32594	198.00
	Extended Term Cover (4P/2SC)	4	X		X		S38293	215.00
	Extended Term Cover (4P/1SC)	4				X	S38294	215.00

▲ P: Poles, SC: Serial connector.

Table 7.157: PV Rear Connection Terminal Covers and Connectors

Choose termination "S" for having the termination kit included with the breaker (Rear Connectors, Term Covers, Serial Connectors)

Frame	Description♦	Poles	Configuration				Field Installable Catalog No.	$ Price
			Ungrounded		Grounded			
			Top	Bottom	Top	Bottom		
T-Frame	Short Terminal Cover (3P)	3	X				S29515	121.00
	Long Terminal Cover (3P/1SC)	3		X	X	X	S35169	145.00
	Short Terminal Cover (4P)	4		X			S29516	141.00
	Long Terminal Cover (4P/1SC)	4				X	S35170	162.00
	Long Terminal Cover (4P/2SC)	4	X		X		S35178	162.00
	Short Rear Connector (set of 2)▲	3, 4	X		X		S29235	162.00
	Long Rear Connector (set of 2)▲	3, 4	X				S29236	206.00
U-Frame	Short Terminal Cover (3P)	3	X				S32562	149.00
	Extended Terminal Cover (3P/1SC)	3		X	X	X	S35171	205.00
	Short Terminal Cover (4P)	4		X			S32563	161.00
	Extended Term Cover (4P/1SC)	4				X	S35172	215.00
	Extended Term Cover (4P/2SC)	4	X		X		S38293	215.00
	Short Rear Connector (set of 2)▲■	3, 4	X		X		S432475	219.00
	Long Rear Connector (set of 2)▲■	3, 4	X				S432476	261.00

▲ The ungrounded configurations (3P or 4P) need 2 short and 2 long rear connectors. The grounded configurations only use 2 short rear connectors.
■ Parts only, no hardware is included. See Table 7.159 U-Frame, below.
♦ P: Poles, SC: Serial connector.

Table 7.158: PV T-Frame Bus Bar and Rear Connections Hardware

Choose termination "F" for having the termination kit included with the breaker (Terminal Nuts, Term Covers, Serial Connectors)

Description	Cat. No.	$ Price
T-Frame Term Nut Insert-Metric/M8 (12)	S30554	150.00

Table 7.159: PV U-Frame Bus Bar and Rear Connections Hardware

Choose termination "F" for having the termination kit included with the breaker (Screws and Washers, Term Covers, Serial Connectors)

Description	Cat. No.	$ Price
Set of 4 M10 x 25 terminal screws and washers for one side	S36967	31.00

Table 7.160: Mechancal Lug Kits for T- and U-Frame Circuit Breakers and Switches

Frame	Description	Conductor			Current	Cat. No.	Qty. Per Kit	$ Price
		Type	No. Per Lug	Size				
T-Frame	Lug(2) T-Frame, 12–4 AWG, Al/Cu	Al	1	#12–#4 AWG (4–25 mm²)	50–60 A	S35167	2	86.00
		Cu	1	#14–#4 AWG (2.5–25 mm²)				
	Lugs(2) T-Frame, 4–4/0 AWG, Al/Cu	Al/Cu	1	#4–#4/0 AWG (25–95 mm²)	70–150 A	S29255	2	86.00
	Lug(2) T-Frame, 250–350 kcmil, Al/Cu	Al	1	#250–350 AWG (120–185 mm²)	175–200 A	S35168	2	86.00
		Cu	1	#2/0–350 AWG (70–185 mm²)				
U-Frame	Lug(2) U-Frame, 2/0 AWG–500 kcmil, Al/Cu	Al	2	2/0 AWG–500 kcmil (70–240 mm²)	225–500 A	S35180	2	225.00
		Cu	2	2/0 AWG–500 kcmil (70–240 mm²)				

NOTE: *For availability dates of field installable accessories in Tables 7.156. 7.157, 7.158 and 7.160 contact Schneider Electric.*

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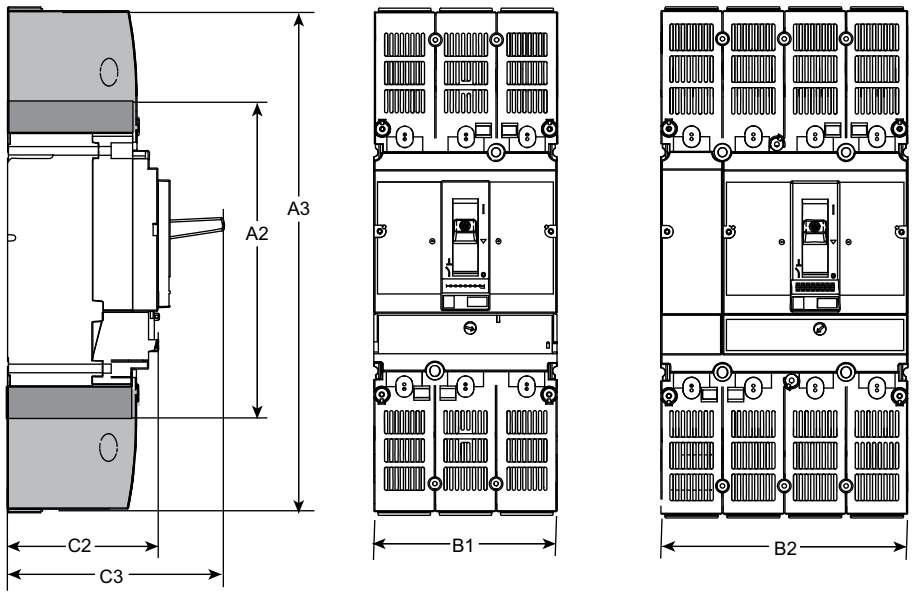
Table 7.161: PV T-Frame Circuit Breaker and Switches Dimensions

	A2	A3	B1	B2	C2	C3
in	7.40	11.42	4.13	5.51	3.39	4.96
mm	188	290	105	140	86	126



A2: Short
A3: Long

Table 7.162: Terminal Cover Configuration According to Wiring Configuration

Wiring Configuration	Connection Type		Terminal Cover Configuration	
	Unit Mount/Bus	Rear Connected	Top	Bottom
3P Ungrounded	X		Long	Long
		X	Short	Long
3P Grounded	X	X	Long	Long
4P Ungrounded	X		Long	Long
		X	Long	Short
4P Grounded	X	X	Long	Long

Table 7.163: Approximate Weights

T-Frames	Product Weight (lbs)	Shipping Weights (lbs)
3P Ungrounded	5	8
3P Grounded	5.5	8.5
4P Ungrounded	6.3	9.3
4P Grounded	6.7	9.7

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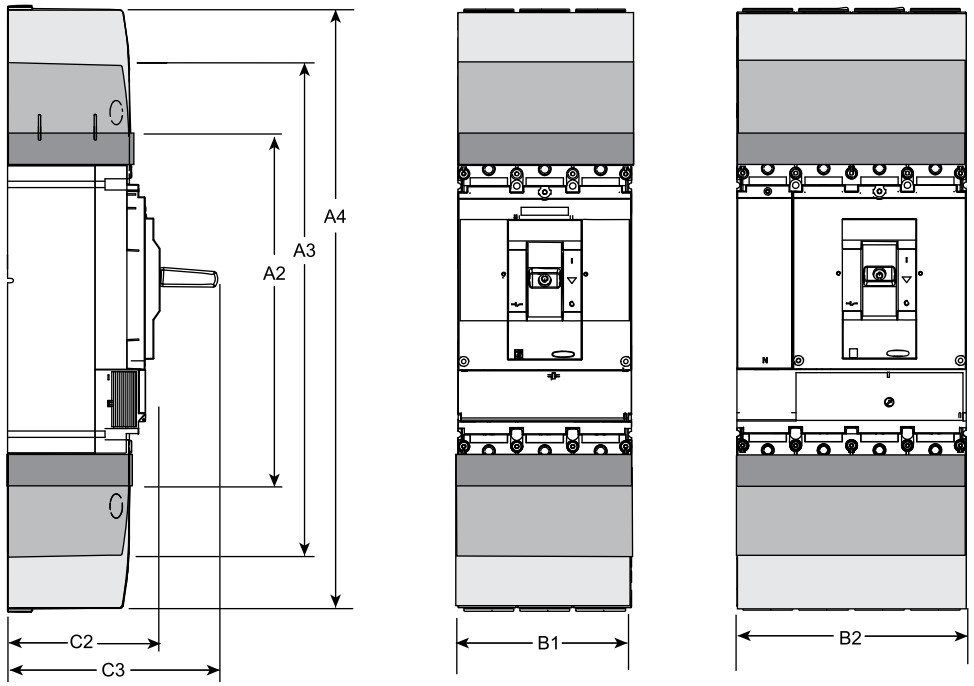
Table 7.164: PV U-Frame Circuit Breaker and Switches Dimensions

	A2	A3	A4	B1	B2	C2	C3
in	11.2	15.7	19.1	5.5	7.2	4.3	6.6
mm	285	400	484	140	183	110	168



A2: Short
A3: Long
A4: Extended

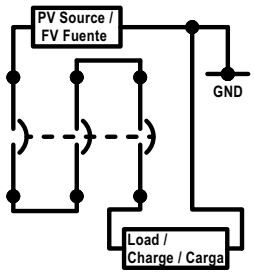
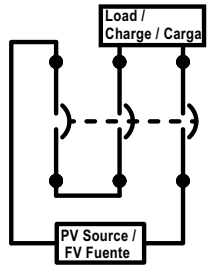
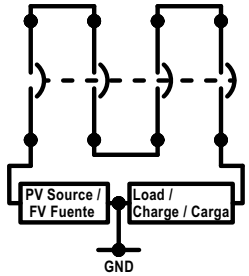
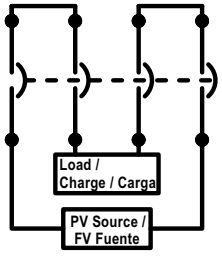
Table 7.165: Terminal Cover Configuration According to Wiring Configuration

Wiring Configuration	Connection Type		Terminal Cover Configuration	
	Unit Mount/Bus	Rear Connected	Top	Bottom
3P Ungrounded	X		Long	Extended
		X	Short	
3P Grounded	X	X	Extended	
4P Ungrounded	X			Long
		X		Short
4P Grounded	X	X		Extended

Table 7.166: Approximate Weights

U-Frames	Product Weight (lbs)	Shipping Weights (lbs)
3P Ungrounded	15	19.5
3P Grounded	17	21.5
4P Ungrounded	21	25.5
4P Grounded	23	27.5

Table 7.167: PV T- and U-Frame Circuit Breakers and Switches Wiring Configurations

600 Vdc (3 Poles)		1000 Vdc (3 Poles)	
Grounded	Ungrounded	Grounded	Ungrounded
			

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QO-K

Key operated QO circuit breakers are available in single-pole construction and can be mounted in any single-pole space which will accept a standard QO. These circuit breakers can be turned ON or OFF or to RESET with a special key (catalog number QOK10) included with the circuit breaker. These circuit breakers are UL Listed and available as shown in the table.

Table 7.168: QO-K Circuit Breakers

120 Vac—10 k AIR (1 Space Required)		
Ampere Rating ♦	Cat. No.	$ Price
10 A	QO110K	**164.00**
15 A	QO115K	**164.00**
20 A	QO120K	**164.00**
30 A	QO130K	**164.00**

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