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# Moulded Case Circuit Breakers

## Feature Information

### Industrial Moulded Case Circuit Breakers

DE3 CIRCUIT BREAKERS

Catalogue Number	Ampere Rating	Field Installable Accessories	Factory Installed Accessories	Current Limiting	I-Line	Add-On G.F. Protection Available	Full Line of Optional Lugs Avail.	HACR Rated	Automatic Moulded Case Switch ♦	MAG-GARD Instantaneous Only *
FA	15-100		X♦		X	X	X	X♦		X
FH	15-100		X		X	X	X	X♦	X	X
FC	15-100		X		X	X	X		X	
FI	20-100		X	X	X	X	X			
HD, HG, HJ, HL	15-150	X	X		X	X	X	X	X	
QB, QD, QG, QJ	70-250				X			X	X♦	
JD, JG, JJ, JL	150-250	X	X		X	X	X	X	X	
KA	70-250		X		X	X	X	X		X
KH	70-250		X		X	X	X	X	X	X
KC	110-250		X		X	X	X		X	
KI	110-250		X	X	X	X	X			
Q4	250-400	X	X		X		X			
LA	125-400	X	X		X		X	X		X
LH	125-400	X	X		X		X	X	X	X
DG	150-600	X	X				X	X	X	
DJ	150-600	X	X				X	X	X	
DL	150-600	X	X				X	X	X	
LC	300-600	X	X		X		X			
LI	300-600	X	X	X	X		X			
LX	300-600	X	X		X		X			
LXI	300-600	X	X	X	X		X			
LE	300-600	X	X		X		X			
MG	300-800	X	X		X		X	X		
MJ	300-800	X	X		X		X	X		
PG	250-1200	X	X		X		X	X	●	
PJ	250-1200	X	X		X		X	X	X	
PK	250-1200	X	X		X		X	X	X	
PL	250-1200	X	X		X		X	X	X	
RG	600-2500	X	X		TO 1200A		X	X		
RJ	600-2500	X	X		TO 1200A		X	X		
RK	600-2500	X	X		TO 1200A		X	X	X	
RL	600-2500	X	X		TO 1200A		X	X	X	

♦ Except 1 Pole

♦ Accessories may be provided in automatic moulded case switches, with the exception of QB, QD, QG, QJ.

\* MAG-GARD® circuit breakers accept the same lugs & accessories as equivalent thermal-magnetic circuit breakers.

### Square D Micrologic® Series B Features

Circuit Breakers	Zone Selective Interlock	Local Current Indication	Trip Indication	True RMS Sensing	POWERLOGIC Compatible	Optional Integral G.F. Protection	G.F. Indication Only
LX		OPTIONAL			X		
LXI	X	OPTIONAL	X	X	X	X	X
LE	X	OPTIONAL	X	X	X	X	X

# Moulded Case Circuit Breaker Selection Information

## Commercial Circuit Breakers

Catalogue Number Prefix				No. of Poles	Cont. Ampere Rating	UL Listed Interrupting Rating - RMS Symmetrical Amperes			DC Volts◆	Digest Sections
						AC Volts (50/60 Hz.)				
Plug-On	Bolt-On	Unit Mt.	I-Line			120	120/240	240	48	
QO	QOB	QOU◆		1	10-70	10k	10k		5k◆	DE1/5/3
				2	10-125	10k	10k		5k◆	
				3	10-100	10k	10k	10k		
QO-H	QOB-H			2	15-100	10k	10k	10k	...	DE1/5
QO-VH				1	15-30	22k	22k		...	DE1
				2	15-125	22k	22k		...	
				3	15-100	22k	22k	22k		
QOB-VH				1	15-30	22k	22k		...	DE5
				2	15-150	22k	22k		...	
				3	15-150	22k	22k	22k		
QH	QHB			1	15-30	65k	65k		...	DE1/5
				2	15-30	65k	65k		...	
				3	15-30	65k	65k	65k		
QOT				1	15-30	10k	10k		...	DE1
QO-GFI	QOB-GFI			1	15-30	10k			...	DE1/5
				2	15-60	10k	10k		...	
QO-AFI	QOB-AFI			1	15-20	10k	10k	10k	...	DE1/5
QO-VHGFI	QOB-VHGFI			1	15-30	22k			...	DE1/5
		QBL■	QBA	2	70-225	10k	10k		...	DE3/5
				3	70-225	10k	10k	10k	...	
		QDL■	QDA	2	70-225	25k	25k	25k	...	DE3/5
				3	70-225	25k	25k	25k	...	
		QGL■	QGA	2	70-225	65k	65k	65k	...	DE3/5
				3					...	
		QJL■	QJA	2	70-225	100k	100k	100k	...	DE3/5
				3					...	
		Q4L	Q4	2	250-400	25k	25k	25k	...	DE3/5
				3	250-400	25k	25k	25k	...	

◆ UL/CSA certified for 1 and 2 pole, 10-70 amperes & 3 pole, 10-60 amperes only.

◆ QOU UL/CSA certified for 60 Vdc per pole 80-100A 1- and 2-pole, and 70-100A 3-pole.

■ Available in 250A.

# Moulded Case Circuit Breakers

## Selection Information

### Industrial Thermal-Magnetic Circuit Breakers

### Electronic Trip Circuit Breakers

DE3 CIRCUIT BREAKERS

Catalogue Number Prefix		No. of Poles	Cont. Ampere Rating	CSA/UL Certified Interrupting Rating - RMS Symmetrical Amperes			DC Volts			Digest Page No.						
Unit Mount	I-LINE			AC Volts. 50/60 Hz			125	250	500							
				120/240	277/480	347/600										
Q4L	Q4	2,3	250-400	25k	...	...	...	...	...	DE3-13						
FAL	FA	1	15-100	10k	...	...	5k	...	...	DE3-9						
240V.	240V.	2,3	15-100	10k	...	...	5k	5k	...							
FAL	FA	1	15-100	25k	18k	...	10k	...	...							
480V.	480V.	2,3	15-100	25k	18k	...	10k	10k	...							
FAL	FA	1	15-100	25k	18k	14k	10k	...	...							
600V.	600V.	2,3	15-100	25k	18k	14k	10k	10k	...							
FHL ◊	FH ◊	1	15-30	65k	65k	18k	10k	...	...							
600V.	600V.	1	35-100	65k	25k	18k	10k	...	...							
		2,3	15-100	65k	25k	18k	10k	10k	...							
FHL-DC *	...	3	...	...	...	...	...	...	20k		...					
FCL	FC	2,3	15-100	100k	65k	...	...	...	...	DE3-9						
FIL	FI	2,3	20-100	200k	200k	100k	...	...	...	DE3-14						
HDL	HDA	2,3	15-150	25k	18k	14k	20k	20k	...	DE3-10/11						
HGL	HGA			65k	35k	18k										
HJL	HJA			100k	65k	25k										
HLL	HLA			125k	100k	50k										
JDL	JDA			25k	18k	14k										
JGL	JGA			65k	35k	18k										
JJL	JJA			100k	65k	25k										
JLL	JLA			125k	100k	50k										
KAL	KA			70-250	150-250	42k					25k	22k	10k	10k	...	DE3-13
KHL ◊	KH ◊					65k					35k	25k	10k	10k	...	
KHL-DC *	...	3	...	...	...	...	...	...	20k	...						
KCL	KC	2,3	110-250	100k	65k	...	...	...	...	DE3-13						
KIL	KI	2,3	70-250	200k	200k	100k	...	...	...	DE3-14						
QBL	QBA			10k	...	...	...	...	...	...						
QDL	QDA			25k	...	...	...	...	...	...						
QGL	QGA			65k	...	...	...	...	...	...						
QJL	QJA			100k	...	...	...	...	...	...						
LAL	LA			2,3	125-400	42k	30k	22k	10k	10k	...	DE3-13				
LHL ◊	LH ◊					65k	35k	25k	10k	10k	...					
LHL-DC *	...t			3	...	...	...	...	...	...	20k	...				
LCL	LC			2,3	300-600	100k	65k	35k	...	...	...	DE3-13				
LIL	LI					200k	200k	100k	...	...	...	DE3-14				

### Electronic Trip Circuit Breakers

MGL	MGA	2,3	300-800	65k	35k	18k	...	...	...	DE3-18		
MJL	MJA			100k	65k	25k	...	...	...			
PGL	PGA	2,3	600-1200	65k	35k	18k	...	...	...	DE3-18		
PJL	PJA			100k	65k	25k	...	...	...			
PLL	PLA			125k	100k	...	...	...	...			
PKL	PKA			65k	50k	50k	...	...	...			
RGL	RGA			65k	35k	18k	...	...	...			
RJL	RJA		100k	65k	25k	...	...	...				
RLL	RLA		1200-2500	125k	100k	50k	...	...	...	DE3-18		
RKL	RKA			65k	65k	65k	...	...	...			
LEL	LE			100-600	100k	65k	35k	...	...		...	DE3-20
LXIL	LXI				200k	200k	100k	...	...		...	DE3-20
LXL	LX	100k			65k	35k	...	...	...		DE3-20	
DGL	...	3	150-600	65	35	18	...	...	...	DE3-17		
DJL	...			100	65	25	...	...	...			
DLL	...			150	100	25	...	...	...			
PGL	PGA			65k	35k	18k	...	...	...			
PJL	PJA			100k	65k	25k	...	...	...			
PLL	PLA	250-1200	125k	100k	...	...	...	...	DE3-23/25			
PKL	PKA		65k	50k	50k	...	...	...				
RGL	RGA		65k	35k	18k	...	...	...				
RJL	RJA		100k	65k	25k	...	...	...				
RLL	RLA		600-2500	125k	100k	50k	...	...		...	DE3-24/26	
RKL	RKA	65k		65k	65k	...	...	...				

- ◊ Separate UL/CSA ratings available for 240V. and 480V. grounded B single phase systems. Circuit breakers must be ordered with 5861 suffix.
- \* UL/CSA listed for 500 Vdc nom. 600 Vdc max. rating. The circuit breakers are suitable only for use with UPS (uninterruptible power supplies) and ungrounded systems. See Supplementary Catalogue.

# Moulded Case Circuit Breaker Application Data, Single Motor Branch Circuits

## Selection Tables for Conductors and Thermal-Magnetic Circuit Breakers

Squirrel-Cage and Wound-Rotor Motors with Norm. Torque Characteristics Operating at Usual Speeds				Horsepower Ratings			Average Direct Current Motors Operating at Base Speed		Full Load Amps	I-LINE Thermal-Magnetic Non-Adjustable Inverse Time Circuit Breaker ■			QMB & Heavy Duty Switch with Time Delay Fuses	Minimum Size Metallic Conduit 75°C Copper Wire Field Installed Sized for 125% FLA		
Three Phase 60 Hz. AC				One Phase 60 Hz. AC			120V. DC	240V. DC		For Motor Code Letter B to E		For Motor Code Letter F to V		AWG kcmil	THHN THWN XHHW	THW
200♦ Volts	230 Volts	460 Volts	575 Volts	115 Volts	200♦ Volts	230 Volts				Ordinary * Service	Heavy● Service					
2		5	7 1/2	1/3	3/4	3/4	3/4	2	6.9	15FA	15FA	20FA	30A	#14	1/2"	N/A
									1		7.2	15FA				
3	3	7 1/2	10	1/2	1 1/2	1 1/2	1 1/2	3	7.6	15FA	20FA	20FA	60A	#8	1/2" ♦	3/4"
									2		7.8	15FA				
5	5	10	15	3/4	2	2	2	5	7.9	15FA	20FA	20FA	100A	#4	1"	1"
									3		8.0	15FA				
7 1/2	7 1/2	15	20	1 1/2	3	3	3	10	8.5	15FA	20FA	20FA	200A	1/0	1 1/4"	1 1/2"
									5		9.0	15FA				
10	10	25	30	3	7 1/2	7 1/2	5	15	9.2	15FA	20FA	25FA	400A	250	2"	2"
									10		9.5	15FA				
15	15	40	50	5	10	10	7 1/2	20	9.6	15FA	20FA	25FA	600A	300	2"	2 1/2"
									15		9.8	15FA				
20	20	50	60	5	10	10	10	25	10.0	20FA	20FA	25FA	800A	350	2 1/2"	2"
									15		11.0	20FA				
25	30	75	100	7 1/2	7 1/2	7 1/2	10	30	11.5	20FA	25FA	30FA	1000A	400	2 - 2"	2 - 2"
									20		12.0	20FA				
30	30	100	125	10	10	10	10	35	12.2	25FA	25FA	35FA	1200A	450	2 - 2 1/2"	2 - 2 1/2"
									15		12.8	25FA				
40	40	150	200	10	10	10	10	40	14.0	25FA	30FA	35FA	1600A	500	3"	3"
									20		14.0	25FA				
50	60	200	250	10	10	10	10	50	15.2	30FA	35FA	40FA	2000A	600	2 - 3/0	2 - 2"
									25		16.0	30FA				
60	75	250	300	7 1/2	7 1/2	7 1/2	15	60	17.0	30FA	35FA	45FA	2500A	700	2 - 3/0	2 - 2"
									30		17.5	35FA				
75	100	300	400	10	10	10	15	75	19.6	35FA	40FA	50FA	3000A	800	2 - 3/0	2 - 2"
									40		20.0	40FA				
100	100	400	500	10	10	10	20	100	21.0	40FA	45FA	60FA	4000A	900	2 - 3/0	2 - 2 1/2"
									50		22.0	40FA				
125	150	500	600	10	10	10	20	125	24.0	45FA	50FA	60FA	5000A	1000	3 - 3/0	3 - 2 1/2"
									60		25.0	50FA				
150	200	600	800	10	10	10	20	150	27.0	50FA	60FA	70FA	6000A	1200	3 - 3/0	3 - 2 1/2"
									75		28.0	50FA				
200	250	800	1000	10	10	10	20	200	29.0	60FA	60FA	80FA	8000A	1600PA	3 - 3/0	3 - 2 1/2"
									100		32.0	60FA				
									32.2	60FA	70FA	90FA				
									34.0	60FA	70FA	90FA				
									38.0	80FA	80FA	100KA				
									40.0	80FA	80FA	100KA				
									41.0	80FA	90FA	110KA				
									42.0	80FA	90FA	110KA				
									46.3	90FA	110KA	125KA				
									48.3	90FA	110KA	125KA				
									50.0	90FA	110KA	125KA				
									52.0	90FA	110KA	150KA				
									54.0	90FA	110KA	150KA				
									55.0	90FA	110KA	150KA				
									56.0	90FA	125KA	150KA				
									57.5	90FA	125KA	150KA				
									58.0	90FA	125KA	150KA				
									62.0	100FA	125KA	175KA				
									62.1	100FA	125KA	175KA				
									65.0	100FA	150KA	175KA				
									68.0	100FA	150KA	175KA				
									72.0	110KA	150KA	200KA				
									76.0	125KA	175KA	200KA				
									77.0	110KA	175KA	200KA				
									78.2	110KA	175KA	200LA				
									80.0	110KA	175KA	200LA				
									89.0	125KA	175KA	225LA				
									92.0	125KA	200LA	250LA				
									96.0	125KA	200LA	250LA				
									99.0	150KA	200LA	250LA				
									100.0	150KA	200LA	250LA				
									104.0	150KA	225LA	300LA				
									106.0	175KA	225LA	300LA				
									119.6	175KA	250LA	300LA				
									124.0	200KA	250LA	350LA				
									125.0	200KA	250LA	350LA				
									130.0	200KA	300LA	350LA				
									140.0	200LA	300LA	350LA				
									144.0	200LA	300LA	400MA				
									149.5	200LA	300LA	400MA				
									154.0	225LA	350LA	400MA				
									156.0	225LA	350LA	400MA				
									173.0	250LA	350LA	400MA				
									177.1	250LA	400MA	500MA				
									180.0	250LA	400MA	500MA				
									192.0	250LA	400MA	500MA				
									220.8	300LA	450MA	600MA				
									240.0	350LA	500MA	600MA				
									242.0	350LA	500MA	700MA				
									248.0	350LA	500MA	700MA				
									285.2	400LA	600MA	800MA				
									289.0	400LA	600MA	800MA				
									302.0	400LA	700MA	800MA				
									312.0	450MA	700MA	800MA				
									336.0	500MA	700MA	900MA				
									358.8	600MA	800MA	900MA				
									360.0	600MA	800MA	1000NA				
									361.0	600MA	800MA	1000NA				
									382.0	600MA	800MA	1000NA				
									414.0	600MA	900MA	1200NA				
									472.0	800MA	1000NA	1200NA				
									477.0	800MA	1000NA	1200NA				
									480.0	800MA	1000NA	1200NA				
									552.0	800MA	1200NA	1600PA				
									590.0	900MA	1200NA	1600PA				
									602.0	900MA	1200NA	1600PA				

♦ #8 XHHW requires 3/4" conduit for 3W.  
 ♦ 200V. motors are commonly used on 200V. services  
 Consult your local Schneider Canada Sales Office for circuit breaker selection on constant horsepower multi-speed motors.  
 For more detailed information, refer to the appropriate section of the Canadian Electric Code.

\* Ordinary service for normal starting duty only with acceleration time of 10 seconds or less.  
 ● Heavy service is jogging or plugging duty or cycling load with over 25 starts per hour or 5

# Moulded Case Circuit Breakers

## QOU

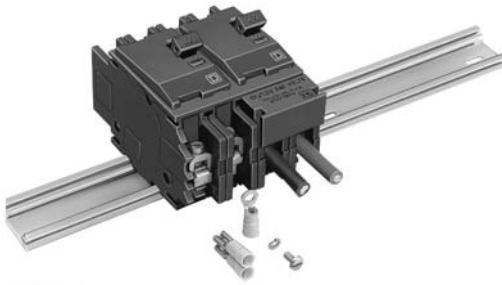
Thermal-Magnetic Trip  
Unit Mounting

240 Vac, 48Vdc Max.  
10 - 125 Amps

### The QOU Series 3 Advantage

General specifications common to LOW AMP (1&2P,10-70A;3P,10-60A) and HIGH AMP (1P,80-100A;2P, 80-125A;3P,70-125A) QOU circuit breakers:

- Terminal lug wire size LOW AMP 1 - #14-2; HIGH AMP 1-#4-#2/0 Cu. or Al.
- Field reversible line and load lugs for convenient flush or surface mount wiring.
- DIN rail mounting (symmetrical rail 35mm X 7.5mm DIN).
- Field installable quick connectors and ring terminal connectors (for forward or reverse mounting).
- Single handle with internal common trip.
- DC rated.
- Exclusive VISI-TRIP® indicator.
- Ambient compensated.
- HACR rated.
- Mounting feet come with breaker.



QOU260, Din Rail Mounted

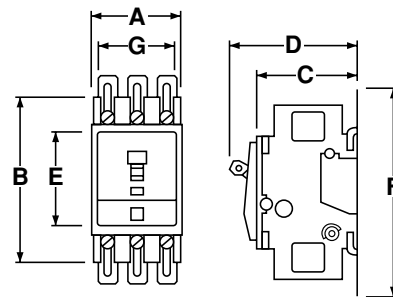
DE3 CIRCUIT BREAKERS

No. of Poles	Description	AIR Rating	Voltage Rating	Amp. Rating	Catalogue Number	Unit Price	No. of Poles	Description	AIR Rating	Voltage Rating	Amp. Rating	Catalogue Number	Unit Price									
One	Thermal-Magnetic Circuit Breaker	10,000 AIR	120/240 Vac	10	<b>QOU110</b>		Two	Thermal-Magnetic Circuit Breaker	10,000 AIR	120/240 Vac	70	<b>QOU270</b>										
				15	<b>QOU115</b>						80	<b>QOU280</b>										
				15	<b>QOU115HM</b> ↕						90	<b>QOU290</b>										
				20	<b>QOU120</b>						100	<b>QOU2100</b>										
				20	<b>QOU120HM</b> ↕						125	<b>QOU2125</b>										
				25	<b>QOU125</b>						Non-auto Moulded Case Switch	N/A		240Vac	60	<b>QOU200</b>						
				30	<b>QOU130</b>										100	<b>QOU2000</b>						
				35	<b>QOU135</b>										125	<b>QOU20001</b>						
				40	<b>QOU140</b>										Three	Thermal-Magnetic Circuit Breaker		10,000 AIR	120/240 Vac	10	<b>QOU310</b>	
				50	<b>QOU150</b>															15	<b>QOU315</b>	
				60	<b>QOU160</b>															20	<b>QOU320</b>	
				70	<b>QOU170</b>															25	<b>QOU325</b>	
				80	<b>QOU180</b>						30	<b>QOU330</b>										
				90	<b>QOU190</b>						35	<b>QOU335</b>										
100	<b>QOU1100</b>	40	<b>QOU340</b>																			
Two	Thermal-Magnetic Circuit Breaker	10,000 AIR	120/240 Vac	10	<b>QOU210</b>		Three	Thermal-Magnetic Circuit Breaker	10,000 AIR	120/240 Vac	50	<b>QOU350</b>										
				15	<b>QOU215</b>						60	<b>QOU360</b>										
				20	<b>QOU220</b>						70	<b>QOU370</b>										
				25	<b>QOU225</b>						80	<b>QOU380</b>										
				30	<b>QOU230</b>						90	<b>QOU390</b>										
				35	<b>QOU235</b>						100	<b>QOU3100</b>										
				40	<b>QOU240</b>						Non-auto Moulded Case Switch	N/A		240Vac	60	<b>QOU300</b>						
				50	<b>QOU250</b>										100	<b>QOU3000</b>						
				60	<b>QOU260</b>										125	<b>QOU30001</b>						

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

No. of Poles	Approximate Dimensions In./mm						
	A	B	C	D	E	F	G
1	0.8/19	4.0/102	2.4/60	3.0/76	2.3/57	5.0/127	0.6/15
2	1.5/38	4.0/102	2.4/60	3.0/76	2.3/57	5.0/127	1.3/34
3	2.3/57	4.0/102	2.4/60	3.0/76	2.3/57	5.0/127	2.1/53

Dimensions are approximate. Do not use for construction.

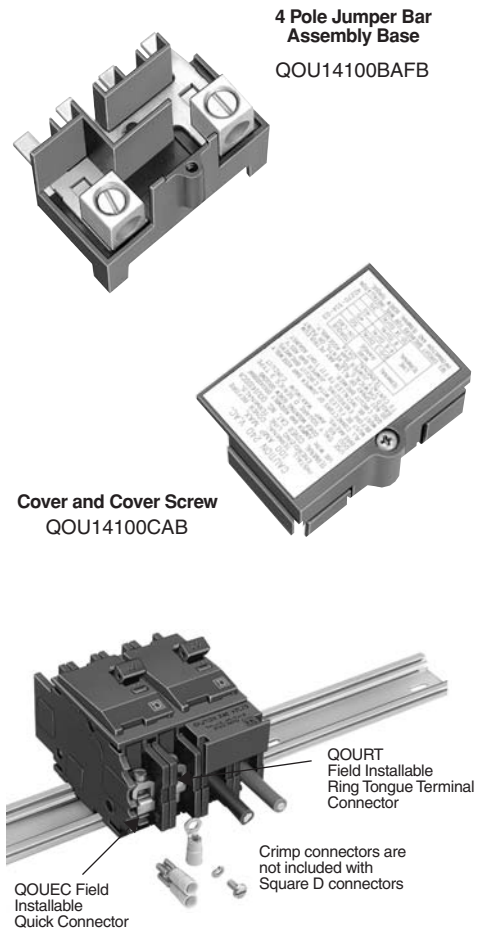


For additional reference QOU Miniature Circuit Breakers & Switches Catalogue 0720CT9401

### Series 3 QOU Accessories

Description	Catalogue Number	Unit Price
4 Pole jumper bar assembly with front wiring. With base, cover and Screw.	<b>QOU14100JBAF</b>	
Single phase, 4 Pole, 100A jumper bar base with front wiring.	<b>QOU14100BAFB</b>	
Single phase, 4 Pole, 100A jumper bar base with left side wiring.	<b>QOU14100BALB</b>	
Single phase, 4 Pole, 100A jumper bar base with right side wiring.	<b>QOU14100BARB</b>	
4 Pole jumper bar cover.	<b>QOU14100CAB</b>	
Mounting screw for jumper bar cover.	<b>QOU1CMSB</b>	
6 Pole jumper bar assembly with front wiring. With base, cover and Screw.	<b>QOU16150JBAF</b>	
Single phase, 6 Pole, 150A jumper bar base with front wiring.	<b>QOU16150BAFB</b>	
Single phase, 6 Pole, 150A jumper bar base with left side wiring.	<b>QOU16150BALB</b>	
Single phase, 6 Pole, 150A jumper bar base with right side wiring.	<b>QOU16150BARB</b>	
6 Pole jumper bar cover.	<b>QOU16150CAB</b>	
Vertical rainproof cover. (2 & 3 Pole QO, QOU, Q2, FA & KA)	<b>BCV</b> ♦	
Horizontal rainproof cover. (2 Pole, QO, QOU, Q2 & 3 Pole Q2)	<b>BCH</b> ♦	
1-Pole Finger Safe Cover For High Ampere QOU	<b>QOUHFSC1</b>	
1-Pole Finger Safe Cover For Low Ampere QOU	<b>QOULFSC1</b>	
Cover plate for One 2 Pole QOU.	<b>QOUCP2</b>	
Cover plate for One 3 Pole QOU.	<b>QOUCP3</b>	
Cover plate for Two 2 Pole QOU.	<b>QOUCP4</b>	
Cover plate for Three 2 Pole QOU.	<b>QOUCP6</b>	
Ring Tongue Terminal Adaptor	<b>QOURT</b>	
Quick connector end connection wiring	<b>QOUEC</b>	
Quick connector forward or reverse wiring	<b>QOUFR</b>	
Single pole QOU mounting foot	<b>QUOMF1</b> ♦	
Two pole QOU mounting foot	<b>QUOMF2</b> ♦	
Three pole QOU mounting foot	<b>QUOMF3</b> ♦	
Handle padlock attachment - 1 Pole	<b>QOU1PA</b>	
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 1-Pole or 2-Pole circuit breaker can be mounted on the left and interlocked with a 2-Pole or 3-Pole circuit breaker on the right.	<b>QOU2DTILA</b> ∞	

♦ For use on low and high ampere QOU.  
∞ 10A-70A 1 Pole & 2 Pole, 10A-60A 3 Pole.



2-Pole DIN Mounted QOU Circuit

### QO Plug-On Mounting Bases ♦

Voltage System	Main Lug Rating	1 Pole Spaces	Max. No. 1-Poles	Catalogue Number	Price	Main Wire Size
Single phase, 3 Wire  For unit mounting QO, QO-GFI and QO-EPD Circuit Breakers	40A	2	2	QON2L40		#14-6 Cu., #12-6 Al.
	70A	2	4	QON2-4L70		#14-4 Cu., #12-3 Al.
	100A	6	12	QON6-12L100		#8-1/0 Cu./Al.
	100A	8	16	QON8-16L100		#8-1/0 Cu./Al.
For unit mounting QO (GFI & EPD) Circuit Breakers (without neutral assembly)	70A	1	1	QOMB1		#14-4 Cu., #12-#2 Al.
	70A	2	2	QOMB2		#14-4 Cu., #12-#2 Al.
	70A	3	3	QOMB3		#14-4 Cu., #12-#2 Al.

♦ For QO circuit breakers refer to book DE1.



# Moulded Case Circuit Breakers

## Introduction

100A - 2500 Amps

### Circuit Protection That Meets Your Specific Needs

To help you get the right protection for your electrical system, SQUARE D offers a comprehensive selection of thermal-magnetic moulded case circuit breakers. They span the full range of CSA certified and UL listed interrupting ratings, standard, high, extra high and current limiting. In addition, our thermal-magnetic line includes an unmatched choice of constructions, voltage and ampere ratings.



100A Frame (FAL, FHL, FCL)  
15-100 Ampere ratings  
Page DE3-9



250A Frame (KAL, KHL, KCL, QBL, QDL,  
QGL, QJL) ♦  
70-250 Ampere ratings  
Page DE3-12/13



400A Frame (Q4L, LAL, LHL, LCL) ♦  
125-400 Ampere ratings  
Page DE3-13



150A Frame Powerpact H  
15-150 Ampere ratings  
Page DE3-10



250A Frame Powerpact J  
150-250 Ampere ratings  
Page DE3-10



600A Frame Powerpact D  
150-600 Ampere ratings  
Page DE3-17



100A Frame (FI)  
20-100 Ampere ratings  
Page DE3-14



250A Frame (KI)  
110-250 Ampere ratings  
Page DE3-14



600A Frame (LI)  
300-600 Ampere ratings  
Page DE3-14



800A Frame Powerpact M  
300-800 Ampere ratings  
Page DE3-18



1200A Frame Powerpact P  
Page DE3-18/23/25



2500A Frame Powerpact R  
Page DE3-18/24/26

♦ Q-L frame is rated 70-250A. ♦ LCL frame is rated 300-600A.



# Moulded Case Circuit Breaker FAL - FHL - FCL

600Vac. 250Vdc Max.  
15 - 100 Amps

100 Ampere Frame

Thermal-magnetic moulded case circuit breakers shown here are permanent trip CSA certified, UL listed, IEC rated. For I-LINE moulded case circuit breakers, see Section DE-5.

Ampere Rating	AC Magnetic Trip Settings Amperes	One Pole		Two Pole		Three Pole		Standard Lug Kit Wire Range
		Catalogue No.	Price ✱	Catalogue No.	Price	Catalogue No.	Price	

## 100 Ampere Frame

### FAL Standard Interrupting 120/240 Volt

	Hold	Trip	120Vac		240Vac		240Vac		Standard Lug Kit Wire Range
			Catalogue No.	Price ✱	Catalogue No.	Price	Catalogue No.	Price	
15	275	600	FAL12015		FAL22015		FAL32015		AL50FA #14-#4 Cu or #12-#4 Al
20	275	600	FAL12020		FAL22020		FAL32020		
25	275	600	FAL12025		FAL22025		FAL32025		
30	275	600	FAL12030		FAL22030		FAL32030		
35	400	850	FAL12035		FAL22035		FAL32035		AL100FA #14-#1/0 Cu or #12-#1/0 Al
40	400	850	FAL12040		FAL22040		FAL32040		
45	400	850	FAL12045		FAL22045		FAL32045		
50	400	850	FAL12050		FAL22050		FAL32050		
60	800	1450	FAL12060		FAL22060		FAL32060		
70	800	1450	FAL12070		FAL22070		FAL32070		
80	800	1450	FAL12080		FAL22080		FAL32080		
90	900	1700	FAL12090		FAL22090		FAL32090		
100	900	1700	FAL12100		FAL22100		FAL32100		

### FAL Standard Interrupting 277/480 Volt

	Hold	Trip	277Vac,125Vdc		480Vac,250Vdc		480Vac,250Vdc		Standard Lug Kit Wire Range
			Catalogue No.	Price ✱	Catalogue No.	Price	Catalogue No.	Price	
15	275	600	FAL14015		FAL24015		FAL34015		AL50FA #14-#4 Cu or #12-#4 Al
20	275	600	FAL14020		FAL24020		FAL34020		
25	275	600	FAL14025		FAL24025		FAL34025		
30	275	600	FAL14030		FAL24030		FAL34030		
35	400	850	FAL14035		FAL24035		FAL34035		AL100FA #14-#1/0 Cu or #12-#1/0 Al
40	400	850	FAL14040		FAL24040		FAL34040		
45	400	850	FAL14045		FAL24045		FAL34045		
50	400	850	FAL14050		FAL24050		FAL34050		
60	800	1450	FAL14060		FAL24060		FAL34060		
70	800	1450	FAL14070		FAL24070		FAL34070		
80	800	1450	FAL14080		FAL24080		FAL34080		
90	900	1700	FAL14090		FAL24090		FAL34090		
100	900	1700	FAL14100		FAL24100		FAL34100		

### FAL Standard Interrupting 347/600 Volt

	Hold	Trip	347Vac,125Vdc		600Vac,250Vdc		600Vac,250Vdc		Standard Lug Kit Wire Range
			Catalogue No.	Price ✱	Catalogue No.	Price	Catalogue No.	Price	
15	275	600	FAL17015		FAL26015		FAL36015		AL50FA #14-#4 Cu or #12-#4 Al
20	275	600	FAL17020		FAL26020		FAL36020		
25	275	600	FAL17025		FAL26025		FAL36025		
30	275	600	FAL17030		FAL26030		FAL36030		
35	400	850	FAL17035		FAL26035		FAL36035		AL100FA #14-#1/0 Cu or #12-#1/0 Al
40	400	850	FAL17040		FAL26040		FAL36040		
45	400	850	FAL17045		FAL26045		FAL36045		
50	400	850	FAL17050		FAL26050		FAL36050		
60	800	1450	FAL17060		FAL26060		FAL36060		
70	800	1450	FAL17070		FAL26070		FAL36070		
80	800	1450	FAL17080		FAL26080		FAL36080		
90	900	1700	FAL17090		FAL26090		FAL36090		
100	900	1700	FAL17100		FAL26100		FAL36100		

### FHL High Interrupting 347/600 Volt

	Hold	Trip	347Vac,125Vdc		600Vac,250Vdc		600Vac,250Vdc		Standard Lug Kit Wire Range
			Catalogue No.	Price ✱	Catalogue No.	Price	Catalogue No.	Price	
15	275	600	FHL17015		FHL26015		FHL36015		AL50FA #14-#4 Cu or #12-#4 Al
20	275	600	FHL17020		FHL26020		FHL36020		
25	275	600	FHL17025		FHL26025		FHL36025		
30	275	600	FHL17030		FHL26030		FHL36030		
35	400	850	FHL17035		FHL26035		FHL36035		AL100FA #14-#1/0 Cu or #12-#1/0 Al
40	400	850	FHL17040		FHL26040		FHL36040		
45	400	850	FHL17045		FHL26045		FHL36045		
50	400	850	FHL17050		FHL26050		FHL36050		
60	800	1450	FHL17060		FHL26060		FHL36060		
70	800	1450	FHL17070		FHL26070		FHL36070		
80	800	1450	FHL17080		FHL26080		FHL36080		
90	900	1700	FHL17090		FHL26090		FHL36090		
100	900	1700	FHL17100		FHL26100		FHL36100		

### FCL Extra High Interrupting 480 Volt

	Hold	Trip	480Vac↕		480Vac		Standard Lug Kit Wire Range
			Catalogue No.	Price ✱	Catalogue No.	Price	
15	275	600	FCL24015		FCL34015		CU30FA #14-#10 Cu
20	275	600	FCL24020		FCL34020		
25	275	600	FCL24025		FCL34025		
30	275	600	FCL24030		FCL34030		
35	400	850	FCL24035		FCL34035		AL100FA #14-#3 Cu or #12-#1 Al
40	400	850	FCL24040		FCL34040		
45	400	850	FCL24045		FCL34045		
50	400	850	FCL24050		FCL34050		
60	800	1450	FCL24060		FCL34060		
70	800	1450	FCL24070		FCL34070		
80	800	1450	FCL24080		FCL34080		
90	900	1700	FCL24090		FCL34090		
100	900	1700	FCL24100		FCL34100		

↕ FCL 2-pole circuit breaker use 3-pole module.

Accessories-DE3-29  
Dimensions-DE3-49  
Enclosures-DE3-27



FAL/FHL  
One Pole  
15-100 Ampere



FAF/FHL  
Two Pole  
15-100Ampere



FAL/FHL/FCL  
Three Pole  
15-100Ampere

### CSA Certified Interrupting Rating RMS Symmetrical Amperes

Breaker Catalogue No. Prefix	System Voltage AC			DC	
	120/240	277/480	347/600	125	250
FAL (240V.)					
1-Pole	10k			5k	
2, 3-Pole	10k			5k	5k
FAL (480V.)					
1-Pole	18k	18k		10k	
2, 3-Pole	25k	18k		10k	10k
FAL (600V.)					
1-Pole	25k	18k	14k	10k	
2, 3-Pole	25k	18k	14k	10k	10k
FHL					
1-Pole	65k	65k	18k	10k	
35-100	65k	25k	18k	10k	
2, 3-Pole	65k	25k	18k	10k	10k
FCL					
2, 3-Pole	100k	65k			

# Moulded Case Circuit Breakers Powerpact H, J

150 and 250 Ampere Frame

600 Vac. 250 Vdc. Max.  
15 - 250 Amps

DE3 CIRCUIT BREAKERS



HD and HG 2-pole



H-frame



J-frame

## H-frame 150 A Thermal-magnetic (600 Vac) Factory Sealed Trip Unit Suitable for Reverse Connection ■▲

Current Rating @ 40° C	AC Magnetic Trip Setting		D Interrupting		G Interrupting		J Interrupting		L Interrupting		Terminal Wire Range
	Hold	Trip	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	
<b>2-pole, 600 Vac 50/60 Hz</b>											
15	350	750	HDL26015		HGL26015		HJL26015		HLL26015		AL150HD #14-#3/0 AWG Cu or Al
20	350	750	HDL26020		HGL26020		HJL26020		HLL26020		
25	350	750	HDL26025		HGL26025		HJL26025		HLL26025		
30	350	750	HDL26030		HGL26030		HJL26030		HLL26030		
35	400	850	HDL26035		HGL26035		HJL26035		HLL26035		
40	400	850	HDL26040		HGL26040		HJL26040		HLL26040		
45	400	850	HDL26045		HGL26045		HJL26045		HLL26045		
50	400	850	HDL26050		HGL26050		HJL26050		HLL26050		
60	800	1450	HDL26060		HGL26060		HJL26060		HLL26060		
70	800	1450	HDL26070		HGL26070		HJL26070		HLL26070		
80	800	1450	HDL26080		HGL26080		HJL26080		HLL26080		
90	800	1450	HDL26090		HGL26090		HJL26090		HLL26090		
100	900	1700	HDL26100		HGL26100		HJL26100		HLL26100		
110	900	1700	HDL26110		HGL26110		HJL26110		HLL26110		
125	900	1700	HDL26125		HGL26125		HJL26125		HLL26125		
150	900	1700	HDL26150		HGL26150		HJL26150		HLL26150		

<b>3-pole, 600 Vac 50/60 Hz</b>											
15	350	750	HDL36015		HGL36015		HJL36015		HLL36015		AL150HD #14-#3/0 AWG Cu or Al
20	350	750	HDL36020		HGL36020		HJL36020		HLL36020		
25	350	750	HDL36025		HGL36025		HJL36025		HLL36025		
30	350	750	HDL36030		HGL36030		HJL36030		HLL36030		
35	400	850	HDL36035		HGL36035		HJL36035		HLL36035		
40	400	850	HDL36040		HGL36040		HJL36040		HLL36040		
45	400	850	HDL36045		HGL36045		HJL36045		HLL36045		
50	400	850	HDL36050		HGL36050		HJL36050		HLL36050		
60	800	1450	HDL36060		HGL36060		HJL36060		HLL36060		
70	800	1450	HDL36070		HGL36070		HJL36070		HLL36070		
80	800	1450	HDL36080		HGL36080		HJL36080		HLL36080		
90	800	1450	HDL36090		HGL36090		HJL36090		HLL36090		
100	900	1700	HDL36100		HGL36100		HJL36100		HLL36100		
110	900	1700	HDL36110		HGL36110		HJL36110		HLL36110		
125	900	1700	HDL36125		HGL36125		HJL36125		HLL36125		
150	900	1700	HDL36150		HGL36150		HJL36150		HLL36150		

## J-frame 250 A Thermal-magnetic (600 Vac) Factory Sealed Trip Unit Suitable for Reverse Connection ■▲

Current Rating @ 40° C	AC Magnetic Trip Setting		D Interrupting		G Interrupting		J Interrupting		L Interrupting		Terminal Wire Range
	Low	High	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	
<b>2-pole, 600 Vac 50/60 Hz</b>											
150	750	1500	JDL26150		JGL26150		JJL26150		JLL26150		AL175JD #1/0-4/0 AWG Al or Cu
175	875	1750	JDL26175		JGL26175		JJL26175		JLL26175		
200	1000	2000	JDL26200		JGL26200		JJL26200		JLL26200		AL250JD #3/0-350 kcmil Al or Cu
225	1125	2250	JDL26225		JGL26225		JJL26225		JLL26225		
250	1250	2500	JDL26250		JGL26250		JJL26250		JLL26250		
<b>3-pole, 600 Vac 50/60 Hz</b>											
150	750	1500	JDL36150		JGL36150		JJL36150		JLL36150		AL175JD #1/0-4/0 AWG Al or Cu
175	875	1750	JDL36175		JGL36175		JJL36175		JLL36175		
200	1000	2000	JDL36200		JGL36200		JJL36200		JLL36200		AL250JD #3/0-350 kcmil Al or Cu
225	1125	2250	JDL36225		JGL36225		JJL36225		JLL36225		
250	1250	2500	JDL36250		JGL36250		JJL36250		JLL36250		

■ See DE3-11 for circuit breakers with field interchangeable trip units.

▲ For 100% rated circuit breakers, add a "C" in the 9th character place (for example, HDL36015C or JDL26150C).

### Interrupting Ratings (kA)

	D	G	J	L
240 V	25	65	100	125
480 V	18	35	65	100
600 V	14	18	25	50

Accessories - DE3-32/33  
Dimensions - DE3-49  
Enclosures - DE3-27

### H- and J-frame Termination Options

- F = No Lugs (includes terminal nut kit)\*
- 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 N, D, and S details see page DE3-36.

\* Add TS suffix for circuit breaker without terminal nut kit.



Plug-in



Drawout



Rear Connected



I-Line®

# Moulded Case Circuit Breaker Powerpact H, J

600 Vac. 250 Vdc. Max.  
15 - 250 Amps

150 and 250 Ampere Frame

## H-frame 150 A 3-pole Thermal-magnetic Frame Only (600 Vac) without terminations

Ampere Rating	D Interrupting		G Interrupting		J Interrupting		L Interrupting	
	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price
15-60 A	HDF36000F06		HGF36000F06		HJF36000F06		HLF36000F06	
70-150 A	HDF36000F15		HGF36000F15		HJF36000F15		HLF36000F15	

## J-frame 250 A 3-pole Thermal-magnetic Frame Only (600 Vac) without terminations

Ampere Rating	D Interrupting		G Interrupting		J Interrupting		L Interrupting	
	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price
150-250 A	JDF36000F25		JGF36000F25		JJF36000F25		JLF36000F25	

See page DE3-46 for lug and termination kits



H-frame with Field Installable Trip Unit

## H- and J-frame 3-pole Field Installable Trip Unit (Thermal-magnetic)

15-60 A H-frame			70-150 A H-frame			150-250 A J-frame		
Amperage	Catalog Number	Price	Amperage	Catalog Number	Price	Amperage	Catalog Number	Price
15 A	HT3015		70 A	HT3070		150 A	JT3150	
20 A	HT3020		80 A	HT3080		175 A	JT3175	
25 A	HT3025		90 A	HT3090		200 A	JT3200	
30 A	HT3030		100 A	HT3100		225 A	JT3225	
35 A	HT3035		110 A	HT3110		250 A	JT3250	
40 A	HT3040		125 A	HT3125		...	...	
45 A	HT3045		150 A	HT3150		...	...	
50 A	HT3050		...	...		...	...	
60 A	HT3060		...	...		...	...	

## Complete Circuit Breakers with Field Interchangeable Trip Units▲

### H-frame 150 A Thermal-magnetic (600 Vac) Circuit Breaker Frame + Field Interchangeable Trip Unit

Ampere Rating	AC Magnetic Trip Settings		D Interrupting		G Interrupting		J Interrupting		L Interrupting		Terminal Wire Range
	Hold	Trip	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	
<b>3-pole, 600 Vac 50/60 Hz</b>											
15	350	750	HDL36015T		HGL36015T		HJL36015T		HLL36015T		AL150HD #14-#3/0 AWG Cu or Al
20	350	750	HDL36020T		HGL36020T		HJL36020T		HLL36020T		
25	350	750	HDL36025T		HGL36025T		HJL36025T		HLL36025T		
30	350	750	HDL36030T		HGL36030T		HJL36030T		HLL36030T		
35	400	850	HDL36035T		HGL36035T		HJL36035T		HLL36035T		
40	400	850	HDL36040T		HGL36040T		HJL36040T		HLL36040T		
45	400	850	HDL36045T		HGL36045T		HJL36045T		HLL36045T		
50	400	850	HDL36050T		HGL36050T		HJL36050T		HLL36050T		
60	800	1450	HDL36060T		HGL36060T		HJL36060T		HLL36060T		
70	800	1450	HDL36070T		HGL36070T		HJL36070T		HLL36070T		
80	800	1450	HDL36080T		HGL36080T		HJL36080T		HLL36080T		
90	800	1450	HDL36090T		HGL36090T		HJL36090T		HLL36090T		
100	900	1700	HDL36100T		HGL36100T		HJL36100T		HLL36100T		
110	900	1700	HDL36110T		HGL36110T		HJL36110T		HLL36110T		
125	900	1700	HDL36125T		HGL36125T		HJL36125T		HLL36125T		
150	900	1700	HDL36150T		HGL36150T		HJL36150T		HLL36150T		

### J-frame 250 A Thermal-magnetic (600 Vac) Circuit Breaker Frame + Field Interchangeable Trip Unit

Ampere Rating	AC Magnetic Trip Settings		D Interrupting		G Interrupting		J Interrupting		L Interrupting		Terminal Wire Range
	Low	High	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	
<b>3-pole, 600 Vac 50/60 Hz</b>											
150	750	1500	JDL36150T		JGL36150T		JJL36150T		JLL36150T		AL175JD #4-4/0 AWG Al or Cu
175	875	1750	JDL36175T		JGL36175T		JJL36175T		JLL36175T		
200	1000	2000	JDL36200T		JGL36200T		JJL36200T		JLL36200T		
225	1125	2250	JDL36225T		JGL36225T		JJL36225T		JLL36225T		AL250JD #3/0-350 kcmil Al or Cu
250	1250	2500	JDL36250T		JGL36250T		JJL36250T		JLL36250T		

▲ Circuit Breakers will be labeled with Line and Load markings and are not suitable for reverse connection. Only available on standard rated 3-pole unit mount circuit breakers, not available with I-line or Plug-in constructions.

# Moulded Case Circuit Breakers

## Powerpact Q

250 Ampere Frame

240 Vac Max  
70-250 Amps

### POWERPACT Q-frame▲—250 A, Thermal-magnetic (240 Vac)

Continuous Current Rating @ 40°C	AC Magnetic Trip Settings		10,000 AIR	25,000 AIR	65,000 AIR	100,000 AIR
	Hold	Trip	Catalogue Number	Catalogue Number	Catalogue Number	Catalogue Number
<b>2-pole, 240 Vac</b>						
70	1000	1800	QBL22070	QDL22070	QGL22070	QJL22070
80	1000	1800	QBL22080	QDL22080	QGL22080	QJL22080
90	1000	1800	QBL22090	QDL22090	QGL22090	QJL22090
100	1200	2400	QBL22100	QDL22100	QGL22100	QJL22100
110	1200	2400	QBL22110	QDL22110	QGL22110	QJL22110
125	1200	2400	QBL22125	QDL22125	QGL22125	QJL22125
150	1200	2400	QBL22150	QDL22150	QGL22150	QJL22150
175	1200	2400	QBL22175	QDL22175	QGL22175	QJL22175
200	1200	2400	QBL22200	QDL22200	QGL22200	QJL22200
225	1200	2400	QBL22225	QDL22225	QGL22225	QJL22225
250	1200	2400	QBL22250■	QDL22250■	QGL22250■	QJL22250■
<b>3-pole, 240 Vac</b>						
70	1000	1800	QBL32070	QDL32070	QGL32070	QJL32070
80	1000	1800	QBL32080	QDL32080	QGL32080	QJL32080
90	1000	1800	QBL32090	QDL32090	QGL32090	QJL32090
100	1200	2400	QBL32100	QDL32100	QGL32100	QJL32100
110	1200	2400	QBL32110	QDL32110	QGL32110	QJL32110
125	1200	2400	QBL32125	QDL32125	QGL32125	QJL32125
150	1200	2400	QBL32150	QDL32150	QGL32150	QJL32150
175	1200	2400	QBL32175	QDL32175	QGL32175	QJL32175
200	1200	2400	QBL32200	QDL32200	QGL32200	QJL32200
225	1200	2400	QBL32225	QDL32225	QGL32225	QJL32225
250	1200	2400	QBL32250■	QDL32250■	QGL32250■	QJL32250■

▲ Replacement lugs are not available for POWERPACT Q-frame circuit breakers. Lugs for the POWERPACT Q-frame circuit breakers accept (1) #14 AWG–1/0 AWG Cu or #8 AWG–1/0 AWG Al.

■ 250 A lugs are suitable for copper conductors only.

### Interrupting Ratings (kA)

	QB	QD	QG	QJ
240 V	10	25	65	100★
480 V	...	...	...	...
600 V	...	...	...	...

★ 3-pole QJ circuit breakers are rated at 208Y/120 Vac only.

Dimensions DE3-49  
Enclosures DE3-27

# Moulded Case Circuit Breaker

## KAL - KHL - KCL - Q4L - LAL - LHL - LCL

70 - 600 Amps  
600Vac, 250Vdc Max.

250 & 600 Ampere Frame



KAL/KHL  
Two & Three Pole  
70-250 Ampere

### CSA Certified Interrupting Rating RMS Symmetrical Amperes

Breaker Cat. No. Prefix	System Voltage AC			DC	
	240	480	600	125	250
KAL	42k	25k	22k	10k	10k
KHL	65k	35k	25k	10k	10k
KCL	100k	65k			
Q4L	25k				
LAL	42k	30k	22k	10k	10k
LHL	65k	35k	25k	10k	10k
LCL	100k	65k			

Accessories - DE3-29  
Enclosures - DE3-27  
Dimensions - DE3-49

Ampere Rating	AC Magnetic Trip Settings Amperes	Two Pole		Three Pole		Standard Lug Kit Wire Range
		Catalogue No.	Price	Catalogue No.	Price	

### 250 Ampere Frame

KAL Standard Interrupting			600Vac, 250Vdc		600Vac, 250Vdc		AL250KA 1-#4-350 kcmil
Low	High						
70	350	700	KAL26070		KAL36070		
80	400	800	KAL26080		KAL36080		
90	450	900	KAL26090		KAL36090		
100	500	1000	KAL26100		KAL36100		
110	550	1100	KAL26110		KAL36110		
125	625	1250	KAL26125		KAL36125		
150	750	1500	KAL26150		KAL36150		
175	875	1750	KAL26175		KAL36175		
200	1000	2000	KAL26200		KAL36200		
225	1125	2250	KAL26225		KAL36225		
250	1250	2500	KAL26250		KAL36250		

### KHL High Interrupting

KHL High Interrupting			600Vac, 250Vdc		600Vac, 250Vdc		AL250KA 1-#4-350 kcmil
Low	High						
70	350	700	KHL26070		KHL36070		
80	400	800	KHL26080		KHL36080		
90	450	900	KHL26090		KHL36090		
100	500	1000	KHL26100		KHL36100		
110	550	1100	KHL26110		KHL36110		
125	625	1250	KHL26125		KHL36125		
150	750	1500	KHL26150		KHL36150		
175	875	1750	KHL26175		KHL36175		
200	1000	2000	KHL26200		KHL36200		
225	1125	2250	KHL26225		KHL36225		
250	1250	2500	KHL26250		KHL36250		

### KCL Extra High Interrupting

KCL Extra High Interrupting			480Vac, 250Vdc		480Vac, 250Vdc		AL250KA 1-#4-350 kcmil
Low	High						
110	550	1100	KCL24110		KCL34110		
125	625	1250	KCL24125		KCL34125		
150	750	1500	KCL24150		KCL34150		
175	875	1750	KCL24175		KCL34175		
200	1000	2000	KCL24200		KCL34200		AL250KI
225	1125	2250	KCL24225		KCL34225		1-1/0-350 kcmil
250	1250	2500	KCL24250		KCL34250		

Ampere Rating	AC Magnetic Trip Settings Amperes	Two Pole		Three Pole		Standard Lug Kit Wire Range
		Catalogue No.	Price	Catalogue No.	Price	

### 400 Ampere Frame

#### Q4L Standard Interrupting

Q4L Standard Interrupting			240Vac		240Vac		AL400LA 1-#1-600 kcmil or 2-#1-250 kcmil AL400LA
Low	High						
250	1250	2500	Q4L2250		Q4L3250		
300	1500	3000	Q4L2300		Q4L3300		
350	1750	3500	Q4L2350		Q4L3350		
400	2000	4000	Q4L2400		Q4L3400		

#### LAL Standard Interrupting

LAL Standard Interrupting			600Vac, 250Vdc		600Vac, 250Vdc		AL400LA 1-#1-600 kcmil or 2-#1-250 kcmil
Low	High						
125	625	1250	LAL26125		LAL36125		
150	750	1500	LAL26150		LAL36150		
175	875	1750	LAL26175		LAL36175		
200	1000	2000	LAL26200		LAL36200		
225	1125	2250	LAL26225		LAL36225		
250	1250	2500	LAL26250		LAL36250		
300	1500	3000	LAL26300		LAL36300		
350	1750	3500	LAL26350		LAL36350		
400	2000	4000	LAL26400		LAL36400		

#### LHL High Interrupting

LHL High Interrupting			600Vac, 250Vdc		600Vac, 250Vdc		AL400LA 1-#1-600 kcmil or 2-#1-250 kcmil
Low	High						
125	625	1250	LHL26125		LHL36125		
150	750	1500	LHL26150		LHL36150		
175	875	1750	LHL26175		LHL36175		
200	1000	2000	LHL26200		LHL36200		
225	1125	2250	LHL26225		LHL36225		
250	1250	2500	LHL26250		LHL36250		
300	1500	3000	LHL26300		LHL36300		
350	1750	3500	LHL26350		LHL36350		
400	2000	4000	LHL26400		LHL36400		

### 600 Ampere Frame

#### LCL Extra High Interrupting

LCL Extra High Interrupting			600Vac		600Vac		AL600LI35 2-#1-350 kcmil
Low	High						
300	1500	3200	LCL26300		LCL36300		
350	1750	3200	LCL26350		LCL36350		
400	2000	3200	LCL26400		LCL36400		
450	2250	4200	LCL26450		LCL36450		
500	2500	4200	LCL26500		LCL36500		AL600LI5
600	3000	4200	LCL26600		LCL36600		2-#4/0-500 kcmil



LAL/LHL  
Two and Three Pole  
125-400 Amperes

# Moulded Case Circuit Breakers

## FIL - KIL - LIL

Current-Limiting Circuit Breakers  
100, 250, 400 & 600 Ampere Frame

600Vac Max.  
20 - 600 Amps

Ampere Rating	AC Magnetic Trip Settings Amperes	Two Pole		Three Pole		Standard Lug Kit Wire Range
		Catalogue No.	Price	Catalogue No.	Price	

### 100 Ampere Frame

#### FIL Current Limiting I-Limiter

Ampere Rating	Hold	Trip	600Vac		600Vac		Standard Lug Kit Wire Range
			Catalogue No.	Price	Catalogue No.	Price	
20	275	600	FIL26020		FIL36020		AL50FA 1-#14-#4 Cu or 1-#12-#4 Al
30	275	600	FIL26030		FIL36030		
40	400	850	FIL26040		FIL36040		AL100FA 1-#14-1/0 Cu or 1-#12-1/0 Al
50	400	850	FIL26050		FIL36050		
60	800	1450	FIL26060		FIL36060		
70	800	1450	FIL26070		FIL36070		
80	800	1450	FIL26080		FIL36080		
90	900	1700	FIL26090		FIL36090		
100	900	1700	FIL26100		FIL36100		

### 250 Ampere Frame

#### KIL Current Limiting I-Limiter

Ampere Rating	Low	High	600Vac		600Vac		Standard Lug Kit Wire Range
			Catalogue No.	Price	Catalogue No.	Price	
110	550	1100	KIL26110		KIL36110		AL250KA 1-#6-350 kcmil
125	625	1250	KIL26125		KIL36125		
150	750	1500	KIL26150		KIL36150		
175	875	1750	KIL26175		KIL36175		
200	1000	2000	KIL26200		KIL36200		AL250KI 1-1/0-350 kcmil
225	1125	2250	KIL26225		KIL36225		
250	1250	2500	KIL26250		KIL36250		

### 400 Ampere Frame

#### LIL Current Limiting I-Limiter

Ampere Rating	Low	High	600Vac		600Vac		Standard Lug Kit Wire Range
			Catalogue No.	Price	Catalogue No.	Price	
300	1500	3200	LIL26300		LIL36300		AL600LI5 2-4/0-500 kcmil
350	1750	3200	LIL26350		LIL36350		
400	2000	3200	LIL26400		LIL36400		

### 600 Ampere Frame

#### LIL Current Limiting I-Limiter

Ampere Rating	Low	High	600Vac		600Vac		Standard Lug Kit Wire Range
			Catalogue No.	Price	Catalogue No.	Price	
450	2250	4200	LIL26450		LIL36450		AL600LI5 2-4/0-500 kcmil
500	2500	4200	LIL26500		LIL36500		
600	3000	4200	LIL26600		LIL36600		

CSA Certified Interrupting Rating  
RMS Symmetrical Amperes

Breaker Cat. No.	System Voltage AC		
	240	480	600
FIL	200k	200k	100k
KIL	200k	200k	100k

Accessories - DE3-29  
Enclosures - DE3-27  
Dimensions - DE3-49/50



FIL36100



KIL36250



LIL36600

# Moulded Case Circuit Breaker Moulded Case Switches

240Vac, 600Vac, 250Vdc Max.  
100 - 2500 Amps

100 - 2500 Ampere Frame

STANDARD moulded case 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 below.

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

Moulded 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.

Circuit breaker accessories such as SHUNT TRIP, AUXILIARY SWITCHES, UNDERVOLTAGE TRIP and ALARM SWITCH may be provided in either standard or automatic switches, with the exception of QO and Q-L switches.

Standard and automatic moulded case switches are CSA certified and UL listed.

Ampere Rating	2-Pole		3-Pole		Withstand Rating <sup>◆</sup>				Trip Point-Amps. (Automatic Switch)		Lug Kit Installed
	Catalogue No.	Price	Catalogue No.	Price	240Vac	480Vac	600Vac	250Vdc	AC <sup>◆</sup>	DC <sup>◆</sup>	
<b>Automatic Moulded Case Switches</b>											
240Vac Automatic											
225	QBL22000S22		QBL32000S22		10k				4500	N/A	N/A
600Vac Automatic											
100	FHL26000M		FHL36000M		65k	25k	18k	10k	1500	1725	AL100FA
150	HGL26000S15 ■		HGL36000S15		65k	35k	18k		1300		AL150HD
175	JGL26000S17		JGL36000S17		65k	35k	18k		2500		AL175JD
250	JGL26000S25		JGL36000S25		65k	35k	18k		2500		AL250JD
150	HLL26000S15		HLL36000S15		125k	100k	50k		1300		AL150HD
175	JLL26000S17		JLL36000S17		125k	100k	50k		2500		AL175JD
250	JLL26000S25		JLL36000S25		125k	100k	50k		2500		AL250JD
250	KHL26000M		KHL36000M		65k	35k	25k	10k	4500	5175	AL250KA
400	LHL26000M		LHL36000M		65k	35k	25k	10k	8000	9600	AL400LA
400			DJL36000S40		100k	65k	25k		6000		32508
600			DJL36000S60		100k	65k	25k		6000		32510

◆ The "Withstand Rating" is the fault current, at rated voltage, that the moulded case switch will withstand without damage when protected by a circuit breaker or fuses with an equal continuous current rating.

◆ Magnetic trip setting tolerances are ±20% from the nominal values shown.

■ True 2-pole device, others are 2-pole in a 3-pole module.

## Powerpact Automatic Moulded Case Switches

Circuit Breaker	Ampere Rating	Catalogue Number	Withstand Rating			Trip Point	Circuit Breaker	Ampere Rating	Catalogue Number	Withstand Rating			Trip Point
			240 Vac	480 Vac	600 Vac					240 Vac	480 Vac	600 Vac	
PJ	600	PJL36000S60	100kA	65kA	25kA	10,000 A	RK	1200	RKF36000S12	65kA	65kA	65kA	57kA
	800	PJL36000S80	100kA	65kA	25kA	10,000 A		1600	RKF36000S16	65kA	65kA	65kA	57kA
	1000	PJL36000S10	100kA	65kA	25kA	10,000 A		2000	RKF36000S20	65kA	65kA	65kA	57kA
	1200	PJL36000S12	100kA	65kA	25kA	10,000 A		2500	RKF36000S25	65kA	65kA	65kA	57kA
PK	600	PKL36000S60	65kA	50kA	50kA	24,000 A	RL	1200	RLF36000S12	125kA	100kA	50kA	48kA
	800	PKL36000S80	65kA	50kA	50kA	24,000 A		1600	RLF36000S16	125kA	100kA	50kA	48kA
	1000	PKL36000S10	65kA	50kA	50kA	24,000 A		2000	RLF36000S20	125kA	100kA	50kA	48kA
	1200	PKL36000S12	65kA	50kA	50kA	24,000 A		2500	RLF36000S25	125kA	100kA	50kA	48kA

# Moulded Case Circuit Breakers

## CDP Breaker Cross to Square D

### CDP Connector Kits

The CDP connector kits are used to install Square D breakers into existing Federal Pioneer CDP panels and Switchboard distribution interiors that originally used branch breakers from the Horizon family.

Please note that these connector kits are designed to be applied on CDP interiors with Extruded Bus only.

### Retrofitting of Square D Breakers into CDP Interiors

Federal Pioneer Horizon Breaker	Amperage	Square D Replacement Breaker	Connector Mounting Hardware
CE Breaker	15A – 150A	15A – 150A Powerpact H ■	HDCMH
	150A – 250A	150A – 225A Powerpact J ■	JDCMH
CJM Breaker	300A – 600A	LC/LI/LX/LE/LXI □	LCCMH

- Need to be replaced in pairs, can not mount a CE breaker back to back with a PowerPact breaker
- The LC/LI/LX/LE/LXI breaker has an overall height of 7-1/2" but will be fitted with a Cover plate to fill the existing branch circuit space of 8-1/4" and used with the LCCMH breaker mounting kit.

### Adding new Square D Breakers into CDP Interiors

Federal Pioneer Horizon Breaker	Amperage	Alternate Square D Breaker	Connector Mounting Hardware
CE Breaker	15A – 100A	15A – 100A Powerpact H ■	HDCMH
	150A – 250A	150A – 225A Powerpact J ■	JDCMH
CJL Breaker	100A – 400A	LA/LH ●	LACMH
CJM Breaker	300A – 600A	LC/LI/LX/LE/LXI ● □	LCCMH
CMH	300A – 1000A	CMH still available	CMHCMH
CK ◆	250A – 1200A	Powerpact P	PCDPCMh

- Need to be replaced in pairs, can not mount a CE breaker back to back with a PowerPact breaker
- The LC/LI/LX/LE/LXI breaker has an overall height of 7-1/2" but will be fitted with a Cover plate to fill the existing branch circuit space of 8-1/4" and used with the LCCMH breaker mounting kit.
- Available only as single mount option. This application will no longer be available as a double mount or Back to back mount due to dimensional constraints.

*Condition 1: Panel with all single row branch circuits.*

A minimum branch circuit height of 8-1/4" is required and a Square D LA/LH breaker may be installed together with the required connector kit, LACMH.

*Condition 2: Panel with all double row branch circuits.*

This will require a modification to the trim to remove a section of the trim centre strip in the location where the new breaker is to be installed. A minimum branch circuit height of 9-5/8" is required and the breaker should be located where the centre strip ends. (This space includes one 1 -3/8" wide filler to support the center strip).

If the breaker must be located between two sections of a double row trim then the minimum branch circuit height required is 11".

(This space includes two 1-3/8" wide fillers to support both ends of the centre strips)

- ◆ Available only for single mount. The CK breaker can not be replaced in existing 12X of branch circuit height, the Square D PowerPact breaker requires space with a 16X branch nominal height. Contact Schneider Services for installation of PowerPact P breaker and mounting hardware.



# Moulded Case Circuit Breaker PowerPact D

600Vac  
150 - 600 Amps

400 & 600 Ampere Frame

## D-frame (600 A 600 Vac) 3P 50/60 Hz Circuit Breaker with Lugs and Electronic Trip Units

Electronic Trip Unit Type	Trip Function	Trip Unit	Continuous Current ▲	G Interrupting		J Interrupting		L Interrupting		Terminal Wire Range (AWG/kcmil)
				Cat. No.	Price	Cat. No.	Price	Cat. No.	Price	
Standard	LS	STR23SP	150 A	DGL36150E20		DJL36150E20		DLL36150E29		2-600 Cu or 2-500 Al
			250 A	DGL36250E20		DJL36250E20		DLL36250E20		
			400 A	DGL36400E20		DJL36400E20		DLL36400E20		
	LSI	SR53UP-F■	150 A	DGL36150E53		DJL36150E53		DLL36150E53		2-600 Cu or 2-500 Al
			250 A	DGL36250E53		DJL36250E53		DLL36250E53		
			400 A	DGL36400E53		DJL36400E53		DLL36400E53		
LSIG	STR53UP-FT■	150 A	DGL36150E54		DJL36150E54		DLL36150E54		2-600 Cu or 2-500 Al	
		250 A	DGL36250E54		DJL36250E54		DLL36250E54			
		400 A	DGL36400E54		DJL36400E54		DLL36400E54			
Ammeter	LSI	STR53UP-FI■	150 A	DGL36150E58		DJL36150E58		DLL36150E58		2-600 Cu or 2-500 Al
			250 A	DGL36250E58		DJL36250E58		DLL36250E58		
			400 A	DGL36400E58		DJL36400E58		DLL36400E58		
	LSIG	STR53UP-FI■	150 A	DGL36150E59		DJL36150E59		DLL36150E59		2-600 Cu or 2-500 Al
			250 A	DGL36250E59		DJL36250E59		DLL36250E59		
			400 A	DGL36400E59		DJL36400E59		DLL36400E59		
			600 A	DGL36600E59		DJL36600E59		DLL36600E59		(2) 2/0-350 Cu or (2) 2/0 - +500 Al

▲ D-frame circuit breakers 400 A and below are 100% rated.

■ F = Fault indicator; T = Residual-type ground-fault protection; I=Ammeter

## D-Frame 3P 600 A Circuit Breaker

Ampere Rating	Basic Frame Only (600 Vac)					
	G Interrupting		J Interrupting		L Interrupting	
	Cat. No.	Price	Cat. No.	Price	Cat. No.	Price
150 A	DGL36150F40		DJL36150F40		DLL36150F40	
250 A	DGL36250F40		DJL36250F40		DLL36250F40	
400 A	DGL36400F40		DJL36400F40		DLL36400F40	
600 A	DGL36600F60		DJL36600F60		DLL36600F60	

Field Installable D-frame 600 A Electronic Trip Unit					
Long-time, Short-time and Instantaneous Protection					
Description	Factory Code	Trip Function	Cat. No.	Price	
STR23SP	E20	LS	36940		
STR53UP-F	E53	LSI	36942		
STR53UP-FT	E54	LSIG	36943		
STR53UP-FI	E58	LSI	36944		
STR53UP-FI	E59	LSIG	36945		

## CSA Certified Interrupting Rating RMS Symmetrical Amperes

Breaker Cat. No. Prefix	System Voltage AC			DC	
	240	480	600	125	250
DG	65k	35k	18k		
DJ	100k	65k	25k		
DL	150k	100k	25k		

Accessories - DE3-33

Dimensions - DE3-49



D-frame Circuit Breaker

DE3 CIRCUIT BREAKERS

# Moulded Case Circuit Breakers

## Powerpact M, P, R

800, 1200, 2500 A Frame

600Vac Max.  
300 - 2500A

### M Frame—800 A, Standard Rated, Electronic Trip System Type ET 1.0



M-frame Unit Mount

Ampere Rating	Adjustable Instantaneous Trip Range		G Interrupting		J Interrupting		Terminal Wire Range
	Low	High	Catalogue Number	Price	Catalogue Number	Price	
<b>2-pole, 600 Vac 50/60 Hz</b>							
300	600	3000	MGL26300		MJL26300		3-3/0 through 500 kcmil Al/Cu
350	700	3500	MGL26350		MJL26350		
400	800	4000	MGL26400		MJL26400		
450	900	4500	MGL26450		MJL26450		
500	1000	5000	MGL26500		MJL26500		
600	1200	6000	MGL26600		MJL26600		
700	1400	7000	MGL26700		MJL26700		
800	1600	8000	MGL26800		MJL26800		
<b>3-pole, 600 Vac 50/60 Hz</b>							
300	600	3000	MGL36300		MJL36300		3-3/0 through 500 kcmil Al/Cu
350	700	3500	MGL36350		MJL36350		
400	800	4000	MGL36400		MJL36400		
450	900	4500	MGL36450		MJL36450		
500	1000	5000	MGL36500		MJL36500		
600	1200	6000	MGL36600		MJL36600		
700	1400	7000	MGL36700		MJL36700		
800	1600	8000	MGL36800		MJL36800		

### P-frame—1200 A, Standard Rated, Electronic Trip System Type ET1.0I



P-frame Standard Trip Unit

Ampere Rating	Adjustable Instantaneous Trip Range		G Interrupting		J Interrupting		K <sup>1</sup> Interrupting		L Interrupting		Terminal Wire Range
	Low	High	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	
<b>2-pole, 600 Vac 50/60 Hz</b>											
600	1200	7200	PGL26060		PJL26060		PKL26060		PLL24060		3-3/0 through 500 kcmil
800	1600	9600	PGL26080		PJL26080		PKL26080		PLL24080		
1000	2000	10000	PGL26100		PJL26100		PKL26100		PLL24100		4-3/0 through 500 kcmil
1200	2400	10000	PGL26120		PJL26120		PKL26120		PLL24120		
<b>3-pole, 600 Vac 50/60 Hz</b>											
600	1200	7200	PGL36060		PJL36060		PKL36060		PLL34060		3-3/0 through 500 kcmil
800	1600	9600	PGL36080		PJL36080		PKL36080		PLL34080		
1000	2000	10000	PGL36100		PJL36100		PKL36100		PLL34100		4-3/0 through 500 kcmil
1200	2400	10000	PGL36120		PJL36120		PKL36120		PLL34120		

### R-frame—2500 A, Standard Rated, Electronic Trip System Type ET1.0I



R-frame Circuit Breaker

Ampere Rating	Adjustable Instantaneous Trip Range		G Interrupting		J Interrupting		K <sup>2</sup> Interrupting		L Interrupting	
	Low	High	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price
<b>2-pole, 600 Vac 50/60 Hz</b>										
1200	2400	14400	RGF26120		RJF26120		RKF26120		RLF26120	
1600	3200	19200	RGF26160		RJF26160		RKF26160		RLF26160	
2000	4000	24000	RGF26200		RJF26200		RKF26200		RLF26200	
2500	5000	30000	RGF26250		RJF26250		RKF26250		RLF26250	
<b>3-pole, 600 Vac 50/60 Hz</b>										
1200	2400	14400	RGF36120		RJF36120		RKF36120		RLF36120	
1600	3200	19200	RGF36160		RJF36160		RKF36160		RLF36160	
2000	4000	24000	RGF36200		RJF36200		RKF36200		RLF36200	
2500	5000	30000	RGF36250		RJF36250		RKF36200		RLF36250	

**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 eight lugs per phase. Order terminal pad kit (RLTB) and optional lugs separately. See page DE3-36.

### M-, P-frame Circuit Breaker Termination Options

(Third character of catalogue number)

F=No Lugs

L=Lugs both ends

M=Lugs "ON" end only

P=Lugs "OFF" end only

### Interrupting Ratings (kA)

	G	J	L	K <sup>1</sup>	K <sup>2</sup>
240 V	65	100	125	65	65
480 V	35	65	100	50	65
600 V	18	25	50*	50	65

Accessories - DE3-35/36

Dimensions - DE3-50

Enclosures - DE3-27

\* This rating does not apply to Powerpact P-frame with L-interrupting as it is rated 480V max.

# Moulded Case Circuit Breaker MICROLOGIC® Series B Trip Systems Features

600Vac Max.  
100 - 600 Amps

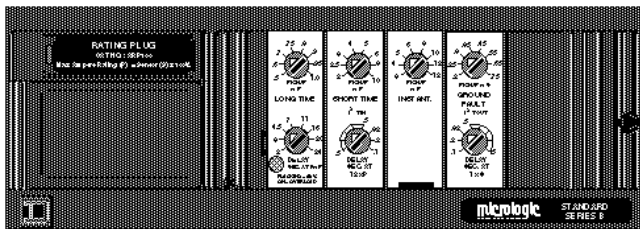
Standard and Full-Function

## Unmatched System Coordination

The MICROLOGIC® line of moulded case circuit breakers uses electronic trip technology to provide flexibility and coordination in system circuit protection.

By joining a sensitive measuring capability with sophisticated logic, this technology allows you to customize your circuit protection system to meet your application needs. For example, you can establish specific characteristic tripping responses for each circuit breaker by setting individual current-response levels and introducing intentional time delays for coordination with downstream components. The results of this customization are greater accuracy, superior repeatability and high reliability.

The breakers use the MICROLOGIC® electronic trip system to sense over-currents and trip the circuit breaker. The MICROLOGIC® Trip System can be either Standard-function or Full-function. Both trip systems provide adjustable tripping functions and characteristics using true root-mean-square (rms) current sensing. The sensing system on an electronic trip moulded case circuit breaker responds to the flow of current through the circuit breaker. Electronic trip circuit breakers are limited to ac systems because the electronic trip system uses current transformers to sense the current.



## Circuit Breakers With Standard MICROLOGIC® Trip Systems LXL, LXIL

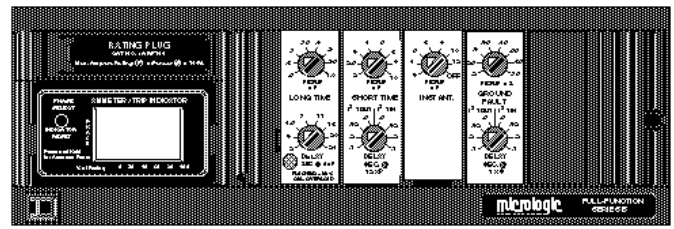
### Standard-function Features:

- 80% Rated
- True RMS Sensing
- Interchangeable Rating Plugs
- LSI, LS(I)G, Trip Configurations
- Short-time Delay =  $I^2t$  IN and Ground-fault Delay =  $I^2t$  OUT
- Integral Ground-fault Testing
- LED Long-time Pickup Indication
- Thermal & Magnetic Backup Protection
- Long-time & Ground-fault Memory
- Optional Local Trip Indicators - Overload, Short-circuit, Ground-fault
- Optional Local Ammeter/Trip Indicator
- Universal Test Set Available
- Optional I-LINE® Mounting (LX, LXI)
- Optional Neutral Current Transformer for 4-Wire Systems

Adjustable rotary switches on the trip unit allow the user to set the proper overcurrent or ground current protection required in the electrical system.

The circuit breakers are shipped with the long-time pickup set at 1.0 and all other trip unit adjustments set at their lowest settings. Actual settings required for a specific application must be determined by a qualified consultant. A coordination study is recommended to provide coordination between all the circuit breakers in the electrical system.

True RMS sensing is your best choice for applications in which you are using non-linear loads for example, silicon-controlled rectifiers, adjustable frequency motor controls and load switching, such as interruptible power supplies. That's because this type of sensing is impervious to the harmonic distortions produced by non-linear loads like computers and other electronic equipment, which can "trick" a peak-sensing circuit into tripping unnecessarily. True RMS sensing measures the magnitude of the current waveform 33 times per cycle (on a 60-Hz system) as current flows through the circuit breaker's sensor or CT.



## Circuit Breakers With Full-Function MICROLOGIC® Trip Systems LEL

### Full-function Features:

- 100% Rated (600 sensor LE/LEL and 2500 sensor PEF circuit breakers are 80% rated)
- True RMS Sensing
- Interchangeable Rating Plugs
- POWERLOGIC compatible
- LI, LIG, LS(I), LS(I)G (Instantaneous OFF) Configurations
- Short-time Delay =  $I^2t$  IN &  $I^2t$  OUT and Ground-fault Delay =  $I^2t$  IN &  $I^2t$  OUT
- Short-time Withstand Rating
- Integral Ground-fault Testing
- Optional Ground-fault Alarm (No Trip) (Requires CIM3F with POWERLOGIC or see Bulletin 0602PD9701.)
- LED Long-time Pickup Indication
- Zone Selective Interlocking (Short-time & Ground-fault)
- Thermal & Magnetic Backup Protection
- Long-time & Ground-fault Memory
- Local Trip Indicators - Overload, Short-circuit, Ground-fault
- Local Ammeter/Trip Indicator
- Universal Test Set Available
- Optional I-LINE® Mounting (LE)
- Optional Neutral Current Transformer for 4-Wire Systems



# Moulded Case Circuit Breakers

## MICROLOGIC<sup>®</sup> Series B Trip Systems Features

Standard and Full-Function

600Vac Max.  
100 - 600 Amps

### L-frame—600 A, Micrologic Series B Trip System 3P, 600 V

	Sensor Size	Ampere Rating	Trip Function	Standard Function	Standard Function Current Limiting	100% Rated Full Function ■	Installed Rating Plug	Terminal Wire Range
				Cat. No.	Cat. No.	Cat. No.		
 <p>Circuit Breakers with Micrologic Standard-function Trip Systems (LXL, LXIL)</p>	250	100	LI	—	—	LEL36100LI	ARP040	AL600L135 (2) 1 AWG–350 kcmil AI
			LSI	LXL36100	LXIL36100	LEL36100LS		
			LIG	—	—	LEL36100LIG		
		LSIG	LXL36100G	LXIL36100G	LEL36100LSG			
		125	LI	—	—	LEL36125LI		
			LSI	LXL36125	LXIL36125	LEL36125LS		
			LIG	—	—	LEL36125LIG		
LSIG	LXL36125G	LXIL36125G	LEL36125LSG					
150	LI	—	—	LEL36150LI				
	LSI	LXL36150	LXIL36150	LEL36150LS				
	LIG	—	—	LEL36150LIG				
LSIG	LXL36150G	LXIL36150G	LEL36150LSG					
175	LI	—	—	LEL36175LI				
	LSI	LXL36175	LXIL36175	LEL36175LS				
	LIG	—	—	LEL36175LIG				
LSIG	LXL36175G	LXIL36175G	LEL36175LSG					
200	LI	—	—	LEL36200LI				
	LSI	LXL36200	LXIL36200	LEL36200LS				
	LIG	—	—	LEL36200LIG				
LSIG	LXL36200G	LXIL36200G	LEL36200LSG					
225	LI	—	—	LEL36225LI				
	LSI	LXL36225	LXIL36225	LEL36225LS				
	LIG	—	—	LEL36225LIG				
LSIG	LXL36225G	LXIL36225G	LEL36225LSG					
250	LI	—	—	LEL36250LI				
	LSI	LXL36250	LXIL36250	LEL36250LS				
	LIG	—	—	LEL36250LIG				
LSIG	LXL36250G	LXIL36250G	LEL36250LSG					
 <p>Circuit Breakers with Micrologic Full-Function Trip Systems (LEL)</p>	400	300	LI	—	—	LEL36300LI	ARP075	AL600L15 (2) 4/0 AWG– 500 kcmil AI
			LSI	LXL36300	LXIL36300	LEL36300LS		
			LIG	—	—	LEL36300LIG		
	LSIG	LXL36300G	LXIL36300G	LEL36300LSG				
	350	LI	—	—	LEL36350LI			
		LSI	LXL36350	LXIL36350	LEL36350LS			
		LIG	—	—	LEL36350LIG			
	LSIG	LXL36350G	LXIL36350G	LEL36350LSG				
	400	LI	—	—	LEL36400LI			
LSI		LXL36400	LXIL36400	LEL36400LS				
LIG		—	—	LEL36400LIG				
LSIG	LXL36400G	LXIL36400G	LEL36400LSG					
600 ▲	450	450	LI	—	—	LEL36450LI	ARP075	
			LSI	LXL36450	LXIL36450	LEL36450LS		
			LIG	—	—	LEL36450LIG		
	LSIG	LXL36450G	LXIL36450G	LEL36450LSG				
	500	500	LI	—	—	LEL36500LI		
			LSI	LXL36500	LXIL36500	LEL36500LS		
LIG			—	—	LEL36500LIG			
LSIG	LXL36500G	LXIL36500G	LEL36500LSG					
600	600	LI	—	—	LEL36600LI	ARP100		
		LSI	LXL36600	LXIL36600	LEL36600LS			
		LIG	—	—	LEL36600LIG			
LSIG	LXL36600G	LXIL36600G	LEL36600LSG					

▲ 600 A sensor is 80% rated.

■ Substitute (A) in place of (G) for ground-fault alarm (pickup indication only). Requires CIM3F and Powerlogic, or see Data Bulletin 0502DB0001. No instantaneous OFF position for LI or LIG trip function type circuit breakers.

### CSA Certified Interrupting Rating RMS Symmetrical Amperes

Breaker Cat. No. Prefix	System Voltage AC		
	240V	480V	600V
LXL	100KA	65KA	35KA
LEL	100KA	65KA	35KA
LXIL	200KA	200KA	100KA

Enclosures - DE3-27

Dimensions - DE3-50

# Moulded Case Circuit Breaker MICROLOGIC® Series B Options

LXL, LXIL  
LEL

## Neutral Current Transformers

Catalogue Number	Price	Sensor	Where Used
LE25CT2		250	LXL, LEL, LXIL
LE4CT2		400	LXL, LEL, LXIL
LE6CT2		600	LXL, LEL, LXIL

Neutral current transformers are required on 3Ø, 4W systems.

## Electronic Trip Indicator and Current Meter Field Installable Kits

Device	Catalogue No.	Optional	Price
Local Trip Indicator Kit	<b>ALTI</b>	LXL, LXIL	
Local Current Meter Kit/Trip Indicator	<b>ALAM</b>	LXL, LXIL	

Local Current Meter Kit & Local trip indicator is standard with LEL.



Combination Local Current Meter and Trip Indicator

## Trip Unit Seal

Catalogue Number	Package Quantity	Price
TUSEAL	100	



Electronic Trip Unit Seals Installed To Restrict Access

## Interchangeable Rating Plug Kits For all Series B MICROLOGIC® Trip Systems

Catalogue Number	Multiplier Value	Price
ARP040	0.400	
ARP050	0.500	
ARP056	0.563	
ARP058	0.583	
ARP060	0.600	
ARP063	0.625	
ARP067	0.667	
ARP070	0.700	
ARP075	0.750	
ARP080	0.800	
ARP083	0.833	
ARP088	0.875	
ARP090	0.900	
ARP100	1.00	

Note: Interchangeable with Series A Rating Plugs.

## Test Equipment For Circuit Breakers With the MICROLOGIC® Trip System

Description	Catalogue Number	Price
<b>Universal Test Set</b> (includes test module for Full-Function and Standard-Function LEL.)	UTS3	
<b>Test Module</b> for Full Function and Standard Function LEL, LXL, LXIL. (For use with existing CBTU1 or UTS3 test set)	CBTMB	



Universal Test Set

## PowerLogic Communication Adaptor

Description	Catalogue Number	Price
Communication Adaptor	CIM3F◇	

◇ Required for PowerLogic hhookup and when using ground fault pick-up and indication "ONLY" option.



CIM3F Communication Adaptor

# Moulded Case Circuit Breakers

## Micrologic Trip Units

### Powerpact and Masterpact



DE3 CIRCUIT BREAKERS

Powerpact® 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:

- LSI trip configurations
- Digital ammeter—phase and neutral
- 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
- LSI (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

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

▲ Requires neutral current transformer in 3Ø4W systems.

■ Requires M2C or M6C Programmable Contact Module.



P-frame 3-pole  
250–1200 Amperes

### P Frame - 1200A, Standard Rated

#### MICROLOGIC Standard Trip Unit

Amps	G Interrupting		J Interrupting		L Interrupting		K Interrupting	
	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price
<b>MICROLOGIC 3.0 (LI Trip Functions)</b>								
250	PGL36025U31A		PJL36025U31A		PLL34025U31A		PKL36025U31A	
400	PGL36040U31A		PJL36040U31A		PLL34040U31A		PKL36040U31A	
600	PGL36060U31A		PJL36060U31A		PLL34060U31A		PKL36060U31A	
800	PGL36080U31A		PJL36080U31A		PLL34080U31A		PKL36080U31A	
1000	PGL36100U31A		PJL36100U31A		PLL34100U31A		PKL36100U31A	
1200	PGL36120U31A		PJL36120U31A		PLL34120U31A		PKL36120U31A	
<b>MICROLOGIC 5.0 (LSI Trip Functions)</b>								
250	PGL36025U33A		PJL36025U33A		PLL34025U33A		PKL36025U33A	
400	PGL36040U33A		PJL36040U33A		PLL34040U33A		PKL36040U33A	
600	PGL36060U33A		PJL36060U33A		PLL34060U33A		PKL36060U33A	
800	PGL36080U33A		PJL36080U33A		PLL34080U33A		PKL36080U33A	
1000	PGL36100U33A		PJL36100U33A		PLL34100U33A		PKL36100U33A	
1200	PGL36120U33A		PJL36120U33A		PLL34120U33A		PKL36120U33A	

#### MICROLOGIC Ammeter Trip Unit

##### MICROLOGIC 3.0A (LI Trip Functions)

250	PGL36025U41A		PJL36025U41A		PLL34025U41A		PKL36025U41A	
400	PGL36040U41A		PJL36040U41A		PLL34040U41A		PKL36040U41A	
600	PGL36060U41A		PJL36060U41A		PLL34060U41A		PKL36060U41A	
800	PGL36080U41A		PJL36080U41A		PLL34080U41A		PKL36080U41A	
1000	PGL36100U41A		PJL36100U41A		PLL34100U41A		PKL36100U41A	
1200	PGL36120U41A		PJL36120U41A		PLL34120U41A		PKL36120U41A	

##### MICROLOGIC 5.0A (LSI Trip Functions)

250	PGL36025U43A		PJL36025U43A		PLL34025U43A		PKL36025U43A	
400	PGL36040U43A		PJL36040U43A		PLL34040U43A		PKL36040U43A	
600	PGL36060U43A		PJL36060U43A		PLL34060U43A		PKL36060U43A	
800	PGL36080U43A		PJL36080U43A		PLL34080U43A		PKL36080U43A	
1000	PGL36100U43A		PJL36100U43A		PLL34100U43A		PKL36100U43A	
1200	PGL36120U43A		PJL36120U43A		PLL34120U43A		PKL36120U43A	

##### MICROLOGIC 6.0A (LSIG Trip Functions)

250	PGL36025U44A		PJL36025U44A		PLL34025U44A		PKL36025U44A	
400	PGL36040U44A		PJL36040U44A		PLL34040U44A		PKL36040U44A	
600	PGL36060U44A		PJL36060U44A		PLL34060U44A		PKL36060U44A	
800	PGL36080U44A		PJL36080U44A		PLL34080U44A		PKL36080U44A	
1000	PGL36100U44A		PJL36100U44A		PLL34100U44A		PKL36100U44A	
1200	PGL36120U44A		PJL36120U44A		PLL34120U44A		PKL36120U44A	

#### MICROLOGIC Power Trip Unit

##### MICROLOGIC 5.0P (LSI Trip Functions)

250	PGL36025U63AE1		PJL36025U63AE1		PLL34025U63AE1		PKL36025U63AE1	
400	PGL36040U63AE1		PJL36040U63AE1		PLL34040U63AE1		PKL36040U63AE1	
600	PGL36060U63AE1		PJL36060U63AE1		PLL34060U63AE1		PKL36060U63AE1	
800	PGL36080U63AE1		PJL36080U63AE1		PLL34080U63AE1		PKL36080U63AE1	
1000	PGL36100U63AE1		PJL36100U63AE1		PLL34100U63AE1		PKL36100U63AE1	
1200	PGL36120U63AE1		PJL36120U63AE1		PLL34120U63AE1		PKL36120U63AE1	

##### MICROLOGIC 6.0P (LSIG Trip Functions)

250	PGL36025U64AE1		PJL36025U64AE1		PLL34025U64AE1		PKL36025U64AE1	
400	PGL36040U64AE1		PJL36040U64AE1		PLL34040U64AE1		PKL36040U64AE1	
600	PGL36060U64AE1		PJL36060U64AE1		PLL34060U64AE1		PKL36060U64AE1	
800	PGL36080U64AE1		PJL36080U64AE1		PLL34080U64AE1		PKL36080U64AE1	
1000	PGL36100U64AE1		PJL36100U64AE1		PLL34100U64AE1		PKL36100U64AE1	
1200	PGL36120U64AE1		PJL36120U64AE1		PLL34120U64AE1		PKL36120U64AE1	

#### Interrupting Ratings (kA)

	G	J	L	K
240 V	65	100	125	65
480 V	35	65	100	50
600 V	18	25		50

Accessories DE3-34

Dimensions DE3-50

Enclosures DE3-27

#### MICROLOGIC Harmonic Trip Unit

##### MICROLOGIC 5.0H (LSI Trip Functions)

250	PGL36025U73AE1		PJL36025U73AE1		PLL34025U73AE1		PKL36025U73AE1	
400	PGL36040U73AE1		PJL36040U73AE1		PLL34040U73AE1		PKL36040U73AE1	
600	PGL36060U73AE1		PJL36060U73AE1		PLL34060U73AE1		PKL36060U73AE1	
800	PGL36080U73AE1		PJL36080U73AE1		PLL34080U73AE1		PKL36080U73AE1	
1000	PGL36100U73AE1		PJL36100U73AE1		PLL34100U73AE1		PKL36100U73AE1	
1200	PGL36120U73AE1		PJL36120U73AE1		PLL34120U73AE1		PKL36120U73AE1	

##### MICROLOGIC 6.0H (LSIG Trip Functions)

250	PGL36025U74AE1		PJL36025U74AE1		PLL34025U74AE1		PKL36025U74AE1	
400	PGL36040U74AE1		PJL36040U74AE1		PLL34040U74AE1		PKL36040U74AE1	
600	PGL36060U74AE1		PJL36060U74AE1		PLL34060U74AE1		PKL36060U74AE1	
800	PGL36080U74AE1		PJL36080U74AE1		PLL34080U74AE1		PKL36080U74AE1	
1000	PGL36100U74AE1		PJL36100U74AE1		PLL34100U74AE1		PKL36100U74AE1	
1200	PGL36120U74AE1		PJL36120U74AE1		PLL34120U74AE1		PKL36120U74AE1	

# Moulded Case Circuit Breakers

Powerpact Electronic Trip

**MICROLOGIC® Trip Systems 80% Rated**



R-frame 3-pole  
600–2500 Amperes  
(UL Listed 4-pole Also Available)

DE3 CIRCUIT BREAKERS

## R-frame—2500 A, Standard Rated

### Micrologic Standard Trip Unit ▲

Amps	G Interrupting		J Interrupting		L Interrupting		K Interrupting	
	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
<b>3-pole, 600 Vac 50/60 Hz With LI Trip Functions (Micrologic 3.0)</b>								
600	RGF36060U31A		RJF36060U31A		RLF36060U31A		RKF36060U31A	
800	RGF36080U31A		RJF36080U31A		RLF36080U31A		RKF36080U31A	
1000	RGF36100U31A		RJF36100U31A		RLF36100U31A		RKF36100U31A	
1200	RGF36120U31A		RJF36120U31A		RLF36120U31A		RKF36120U31A	
1600	RGF36160U31A		RJF36160U31A		RLF36160U31A		RKF36160U31A	
2000	RGF36200U31A		RJF36200U31A		RLF36200U31A		RKF36200U31A	
2500	RGF36250U31A		RJF36250U31A		RLF36250U31A		RKF36250U31A	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0)</b>								
600	RGF36060U33A		RJF36060U33A		RLF36060U33A		RKF36060U33A	
800	RGF36080U33A		RJF36080U33A		RLF36080U33A		RKF36080U33A	
1000	RGF36100U33A		RJF36100U33A		RLF36100U33A		RKF36100U33A	
1200	RGF36120U33A		RJF36120U33A		RLF36120U33A		RKF36120U33A	
1600	RGF36160U33A		RJF36160U33A		RLF36160U33A		RKF36160U33A	
2000	RGF36200U33A		RJF36200U33A		RLF36200U33A		RKF36200U33A	
2500	RGF36250U33A		RJF36250U33A		RLF36250U33A		RKF36250U33A	

### Micrologic Ammeter Trip Unit ▲

<b>3-pole, 600 Vac 50/60 Hz With LI Trip Functions (Micrologic 3.0A)</b>								
600	RGF36060U41A		RJF36060U41A		RLF36060U41A		RKF36060U41A	
800	RGF36080U41A		RJF36080U41A		RLF36080U41A		RKF36080U41A	
1000	RGF36100U41A		RJF36100U41A		RLF36100U41A		RKF36100U41A	
1200	RGF36120U41A		RJF36120U41A		RLF36120U41A		RKF36120U41A	
1600	RGF36160U41A		RJF36160U41A		RLF36160U41A		RKF36160U41A	
2000	RGF36200U41A		RJF36200U41A		RLF36200U41A		RKF36200U41A	
2500	RGF36250U41A		RJF36250U41A		RLF36250U41A		RKF36250U41A	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0A)</b>								
600	RGF36060U43A		RJF36060U43A		RLF36060U43A		RKF36060U43A	
800	RGF36080U43A		RJF36080U43A		RLF36080U43A		RKF36080U43A	
1000	RGF36100U43A		RJF36100U43A		RLF36100U43A		RKF36100U43A	
1200	RGF36120U43A		RJF36120U43A		RLF36120U43A		RKF36120U43A	
1600	RGF36160U43A		RJF36160U43A		RLF36160U43A		RKF36160U43A	
2000	RGF36200U43A		RJF36200U43A		RLF36200U43A		RKF36200U43A	
2500	RGF36250U43A		RJF36250U43A		RLF36250U43A		RKF36250U43A	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 6.0A)</b>								
600	RGF36060U44A		RJF36060U44A		RLF36060U44A		RKF36060U44A	
800	RGF36080U44A		RJF36080U44A		RLF36080U44A		RKF36080U44A	
1000	RGF36100U44A		RJF36100U44A		RLF36100U44A		RKF36100U44A	
1200	RGF36120U44A		RJF36120U44A		RLF36120U44A		RKF36120U44A	
1600	RGF36160U44A		RJF36160U44A		RLF36160U44A		RKF36160U44A	
2000	RGF36200U44A		RJF36200U44A		RLF36200U44A		RKF36200U44A	
2500	RGF36250U44A		RJF36250U44A		RLF36250U44A		RKF36250U44A	

### Micrologic Power Trip Unit ▲

<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0P)</b>								
600	RGF36060U63AE1		RJF36060U63AE1		RLF36060U63AE1		RKF36060U63AE1	
800	RGF36080U63AE1		RJF36080U63AE1		RLF36080U63AE1		RKF36080U63AE1	
1000	RGF36100U63AE1		RJF36100U63AE1		RLF36100U63AE1		RKF36100U63AE1	
1200	RGF36120U63AE1		RJF36120U63AE1		RLF36120U63AE1		RKF36120U63AE1	
1600	RGF36160U63AE1		RJF36160U63AE1		RLF36160U63AE1		RKF36160U63AE1	
2000	RGF36200U63AE1		RJF36200U63AE1		RLF36200U63AE1		RKF36200U63AE1	
2500	RGF36250U63AE1		RJF36250U63AE1		RLF36250U63AE1		RKF36250U63AE1	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 6.0P)</b>								
600	RGF36060U64AE1		RJF36060U64AE1		RLF36060U64AE1		RKF36060U64AE1	
800	RGF36080U64AE1		RJF36080U64AE1		RLF36080U64AE1		RKF36080U64AE1	
1000	RGF36100U64AE1		RJF36100U64AE1		RLF36100U64AE1		RKF36100U64AE1	
1200	RGF36120U64AE1		RJF36120U64AE1		RLF36120U64AE1		RKF36120U64AE1	
1600	RGF36160U64AE1		RJF36160U64AE1		RLF36160U64AE1		RKF36160U64AE1	
2000	RGF36200U64AE1		RJF36200U64AE1		RLF36200U64AE1		RKF36200U64AE1	
2500	RGF36250U64AE1		RJF36250U64AE1		RLF36250U64AE1		RKF36250U64AE1	

### Micrologic Harmonic Trip Unit ▲

<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0H)</b>								
600	RGF36060U73AE1		RJF36060U73AE1		RLF36060U73AE1		RKF36060U73AE1	
800	RGF36080U73AE1		RJF36080U73AE1		RLF36080U73AE1		RKF36080U73AE1	
1000	RGF36100U73AE1		RJF36100U73AE1		RLF36100U73AE1		RKF36100U73AE1	
1200	RGF36120U73AE1		RJF36120U73AE1		RLF36120U73AE1		RKF36120U73AE1	
1600	RGF36160U73AE1		RJF36160U73AE1		RLF36160U73AE1		RKF36160U73AE1	
2000	RGF36200U73AE1		RJF36200U73AE1		RLF36200U73AE1		RKF36200U73AE1	
2500	RGF36250U73AE1		RJF36250U73AE1		RLF36250U73AE1		RKF36250U73AE1	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 6.0H)</b>								
600	RGF36060U74AE1		RJF36060U74AE1		RLF36060U74AE1		RKF36060U74AE1	
800	RGF36080U74AE1		RJF36080U74AE1		RLF36080U74AE1		RKF36080U74AE1	
1000	RGF36100U74AE1		RJF36100U74AE1		RLF36100U74AE1		RKF36100U74AE1	
1200	RGF36120U74AE1		RJF36120U74AE1		RLF36120U74AE1		RKF36120U74AE1	
1600	RGF36160U74AE1		RJF36160U74AE1		RLF36160U74AE1		RKF36160U74AE1	
2000	RGF36200U74AE1		RJF36200U74AE1		RLF36200U74AE1		RKF36200U74AE1	
2500	RGF36250U74AE1		RJF36250U74AE1		RLF36250U74AE1		RKF36250U74AE1	

### Interrupting Ratings (kA)

	G	J	L	K
240 V	65	100	125	65
480 V	35	65	100	65
600 V	18	25	50	65

Accessories DE3-34

Dimensions DE3-50

▲ The standard rating plug supplied with a trip unit will be the "A" rating plug. To specify an alternative rating plug, replace the "A" at the end of the catalogue number with the applicable suffix letter. See chart on DE3-34 for rating plug catalogue suffix letters.

**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 eight lugs per phase. Order terminal pad kit (RLTB) and optional lugs separately. See pages DE3-36.





P-frame 3-pole  
250–1200 Amperes

#### P Frame - 1200A, 100% Rated

Amps	G Interrupting		J Interrupting		L Interrupting		K Interrupting	
	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price

##### MICROLOGIC 3.0 (LI Trip Functions)

250	PGL36025CU31A		PJL36025CU31A		PLL34025CU31A		PKL36025CU31A	
400	PGL36040CU31A		PJL36040CU31A		PLL34040CU31A		PKL36040CU31A	
600	PGL36060CU31A		PJL36060CU31A		PLL34060CU31A		PKL36060CU31A	
800	PGL36080CU31A		PJL36080CU31A		PLL34080CU31A		PKL36080CU31A	
1000	PGL36100CU31A		PJL36100CU31A		PLL34100CU31A		PKL36100CU31A	
1200	PGL36120CU31A		PJL36120CU31A		PLL34120CU31A		PKL36120CU31A	

##### MICROLOGIC 5.0 (LSI Trip Functions)

250	PGL36025CU33A		PJL36025CU33A		PLL34025CU33A		PKL36025CU33A	
400	PGL36040CU33A		PJL36040CU33A		PLL34040CU33A		PKL36040CU33A	
600	PGL36060CU33A		PJL36060CU33A		PLL34060CU33A		PKL36060CU33A	
800	PGL36080CU33A		PJL36080CU33A		PLL34080CU33A		PKL36080CU33A	
1000	PGL36100CU33A		PJL36100CU33A		PLL34100CU33A		PKL36100CU33A	
1200	PGL36120CU33A		PJL36120CU33A		PLL34120CU33A		PKL36120CU33A	

##### MICROLOGIC 3.0A (LI Trip Functions)

250	PGL36025CU41A		PJL36025CU41A		PLL34025CU41A		PKL36025CU41A	
400	PGL36040CU41A		PJL36040CU41A		PLL34040CU41A		PKL36040CU41A	
600	PGL36060CU41A		PJL36060CU41A		PLL34060CU41A		PKL36060CU41A	
800	PGL36080CU41A		PJL36080CU41A		PLL34080CU41A		PKL36080CU41A	
1000	PGL36100CU41A		PJL36100CU41A		PLL34100CU41A		PKL36100CU41A	
1200	PGL36120CU41A		PJL36120CU41A		PLL34120CU41A		PKL36120CU41A	

##### MICROLOGIC 5.0A (LSI Trip Functions)

250	PGL36025CU43A		PJL36025CU43A		PLL34025CU43A		PKL36025CU43A	
400	PGL36040CU43A		PJL36040CU43A		PLL34040CU43A		PKL36040CU43A	
600	PGL36060CU43A		PJL36060CU43A		PLL34060CU43A		PKL36060CU43A	
800	PGL36080CU43A		PJL36080CU43A		PLL34080CU43A		PKL36080CU43A	
1000	PGL36100CU43A		PJL36100CU43A		PLL34100CU43A		PKL36100CU43A	
1200	PGL36120CU43A		PJL36120CU43A		PLL34120CU43A		PKL36120CU43A	

##### MICROLOGIC 6.0A (LSIG Trip Functions)

250	PGL36025CU44A		PJL36025CU44A		PLL34025CU44A		PKL36025CU44A	
400	PGL36040CU44A		PJL36040CU44A		PLL34040CU44A		PKL36040CU44A	
600	PGL36060CU44A		PJL36060CU44A		PLL34060CU44A		PKL36060CU44A	
800	PGL36080CU44A		PJL36080CU44A		PLL34080CU44A		PKL36080CU44A	
1000	PGL36100CU44A		PJL36100CU44A		PLL34100CU44A		PKL36100CU44A	
1200	PGL36120CU44A		PJL36120CU44A		PLL34120CU44A		PKL36120CU44A	

##### MICROLOGIC 5.0P (LSI Trip Functions)

250	PGL36025CU63AE1		PJL36025CU63AE1		PLL34025CU63AE1		PKL36025CU63AE1	
400	PGL36040CU63AE1		PJL36040CU63AE1		PLL34040CU63AE1		PKL36040CU63AE1	
600	PGL36060CU63AE1		PJL36060CU63AE1		PLL34060CU63AE1		PKL36060CU63AE1	
800	PGL36080CU63AE1		PJL36080CU63AE1		PLL34080CU63AE1		PKL36080CU63AE1	
1000	PGL36100CU63AE1		PJL36100CU63AE1		PLL34100CU63AE1		PKL36100CU63AE1	
1200	PGL36120CU63AE1		PJL36120CU63AE1		PLL34120CU63AE1		PKL36120CU63AE1	

##### MICROLOGIC 6.0P (LSIG Trip Functions)

250	PGL36025CU64AE1		PJL36025CU64AE1		PLL34025CU64AE1		PKL36025CU64AE1	
400	PGL36040CU64AE1		PJL36040CU64AE1		PLL34040CU64AE1		PKL36040CU64AE1	
600	PGL36060CU64AE1		PJL36060CU64AE1		PLL34060CU64AE1		PKL36060CU64AE1	
800	PGL36080CU64AE1		PJL36080CU64AE1		PLL34080CU64AE1		PKL36080CU64AE1	
1000	PGL36100CU64AE1		PJL36100CU64AE1		PLL34100CU64AE1		PKL36100CU64AE1	
1200	PGL36120CU64AE1		PJL36120CU64AE1		PLL34120CU64AE1		PKL36120CU64AE1	

#### Interrupting Ratings (kA)

	G	J	L	K
240 V	65	100	125	65
480 V	35	65	100	50
600 V	18	25		50

Accessories DE3-34

Dimensions DE3-50

Enclosures DE3-27

##### MICROLOGIC 5.0H (LSI Trip Functions)

250	PGL36025CU73AE1		PJL36025CU73AE1		PLL34025CU73AE1		PKL36025CU73AE1	
400	PGL36040CU73AE1		PJL36040CU73AE1		PLL34040CU73AE1		PKL36040CU73AE1	
600	PGL36060CU73AE1		PJL36060CU73AE1		PLL34060CU73AE1		PKL36060CU73AE1	
800	PGL36080CU73AE1		PJL36080CU73AE1		PLL34080CU73AE1		PKL36080CU73AE1	
1000	PGL36100CU73AE1		PJL36100CU73AE1		PLL34100CU73AE1		PKL36100CU73AE1	
1200	PGL36120CU73AE1		PJL36120CU73AE1		PLL34120CU73AE1		PKL36120CU73AE1	

##### MICROLOGIC 6.0H (LSIG Trip Functions)

250	PGL36025CU74AE1		PJL36025CU74AE1		PLL34025CU74AE1		PKL36025CU74AE1	
400	PGL36040CU74AE1		PJL36040CU74AE1		PLL34040CU74AE1		PKL36040CU74AE1	
600	PGL36060CU74AE1		PJL36060CU74AE1		PLL34060CU74AE1		PKL36060CU74AE1	
800	PGL36080CU74AE1		PJL36080CU74AE1		PLL34080CU74AE1		PKL36080CU74AE1	
1000	PGL36100CU74AE1		PJL36100CU74AE1		PLL34100CU74AE1		PKL36100CU74AE1	
1200	PGL36120CU74AE1		PJL36120CU74AE1		PLL34120CU74AE1		PKL36120CU74AE1	

# Moulded Case Circuit Breakers

## Powerpact Electronic Trip

### MICROLOGIC® Trip Systems 100% Rated



R-frame 3-pole  
600–2500 Amperes  
(UL Listed 4-pole Also Available)

DE3 CIRCUIT BREAKERS

### R-frame—2500 A, 100% Rated

#### Micrologic Standard Trip Unit ▲

Amps	G Interrupting		J Interrupting		L Interrupting		K Interrupting	
	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price	Catalogue Number	Price
<b>3-pole, 600 Vac 50/60 Hz With LI Trip Functions (Micrologic 3.0)</b>								
600	RGF36060CU31A		RJF36060CU31A		RLF36060CU31A		RKF36060CU31A	
800	RGF36080CU31A		RJF36080CU31A		RLF36080CU31A		RKF36080CU31A	
1000	RGF36100CU31A		RJF36100CU31A		RLF36100CU31A		RKF36100CU31A	
1200	RGF36120CU31A		RJF36120CU31A		RLF36120CU31A		RKF36120CU31A	
1600	RGF36160CU31A		RJF36160CU31A		RLF36160CU31A		RKF36160CU31A	
2000	RGF36200CU31A		RJF36200CU31A		RLF36200CU31A		RKF36200CU31A	
2500	RGF36250CU31A		RJF36250CU31A		RLF36250CU31A		RKF36250CU31A	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0)</b>								
600	RGF36060CU33A		RJF36060CU33A		RLF36060CU33A		RKF36060CU33A	
800	RGF36080CU33A		RJF36080CU33A		RLF36080CU33A		RKF36080CU33A	
1000	RGF36100CU33A		RJF36100CU33A		RLF36100CU33A		RKF36100CU33A	
1200	RGF36120CU33A		RJF36120CU33A		RLF36120CU33A		RKF36120CU33A	
1600	RGF36160CU33A		RJF36160CU33A		RLF36160CU33A		RKF36160CU33A	
2000	RGF36200CU33A		RJF36200CU33A		RLF36200CU33A		RKF36200CU33A	
2500	RGF36250CU33A		RJF36250CU33A		RLF36250CU33A		RKF36250CU33A	

#### Micrologic Ammeter Trip Unit ▲

<b>3-pole, 600 Vac 50/60 Hz With LI Trip Functions (Micrologic 3.0A)</b>								
600	RGF36060CU41A		RJF36060CU41A		RLF36060CU41A		RKF36060CU41A	
800	RGF36080CU41A		RJF36080CU41A		RLF36080CU41A		RKF36080CU41A	
1000	RGF36100CU41A		RJF36100CU41A		RLF36100CU41A		RKF36100CU41A	
1200	RGF36120CU41A		RJF36120CU41A		RLF36120CU41A		RKF36120CU41A	
1600	RGF36160CU41A		RJF36160CU41A		RLF36160CU41A		RKF36160CU41A	
2000	RGF36200CU41A		RJF36200CU41A		RLF36200CU41A		RKF36200CU41A	
2500	RGF36250CU41A		RJF36250CU41A		RLF36250CU41A		RKF36250CU41A	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0A)</b>								
600	RGF36060CU43A		RJF36060CU43A		RLF36060CU43A		RKF36060CU43A	
800	RGF36080CU43A		RJF36080CU43A		RLF36080CU43A		RKF36080CU43A	
1000	RGF36100CU43A		RJF36100CU43A		RLF36100CU43A		RKF36100CU43A	
1200	RGF36120CU43A		RJF36120CU43A		RLF36120CU43A		RKF36120CU43A	
1600	RGF36160CU43A		RJF36160CU43A		RLF36160CU43A		RKF36160CU43A	
2000	RGF36200CU43A		RJF36200CU43A		RLF36200CU43A		RKF36200CU43A	
2500	RGF36250CU43A		RJF36250CU43A		RLF36250CU43A		RKF36250CU43A	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 6.0A)</b>								
600	RGF36060CU44A		RJF36060CU44A		RLF36060CU44A		RKF36060CU44A	
800	RGF36080CU44A		RJF36080CU44A		RLF36080CU44A		RKF36080CU44A	
1000	RGF36100CU44A		RJF36100CU44A		RLF36100CU44A		RKF36100CU44A	
1200	RGF36120CU44A		RJF36120CU44A		RLF36120CU44A		RKF36120CU44A	
1600	RGF36160CU44A		RJF36160CU44A		RLF36160CU44A		RKF36160CU44A	
2000	RGF36200CU44A		RJF36200CU44A		RLF36200CU44A		RKF36200CU44A	
2500	RGF36250CU44A		RJF36250CU44A		RLF36250CU44A		RKF36250CU44A	

#### Micrologic Power Trip Unit ▲

<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0P)</b>								
600	RGF36060CU63AE1		RJF36060CU63AE1		RLF36060CU63AE1		RKF36060CU63AE1	
800	RGF36080CU63AE1		RJF36080CU63AE1		RLF36080CU63AE1		RKF36080CU63AE1	
1000	RGF36100CU63AE1		RJF36100CU63AE1		RLF36100CU63AE1		RKF36100CU63AE1	
1200	RGF36120CU63AE1		RJF36120CU63AE1		RLF36120CU63AE1		RKF36120CU63AE1	
1600	RGF36160CU63AE1		RJF36160CU63AE1		RLF36160CU63AE1		RKF36160CU63AE1	
2000	RGF36200CU63AE1		RJF36200CU63AE1		RLF36200CU63AE1		RKF36200CU63AE1	
2500	RGF36250CU63AE1		RJF36250CU63AE1		RLF36250CU63AE1		RKF36250CU63AE1	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 6.0P)</b>								
600	RGF36060CU64AE1		RJF36060CU64AE1		RLF36060CU64AE1		RKF36060CU64AE1	
800	RGF36080CU64AE1		RJF36080CU64AE1		RLF36080CU64AE1		RKF36080CU64AE1	
1000	RGF36100CU64AE1		RJF36100CU64AE1		RLF36100CU64AE1		RKF36100CU64AE1	
1200	RGF36120CU64AE1		RJF36120CU64AE1		RLF36120CU64AE1		RKF36120CU64AE1	
1600	RGF36160CU64AE1		RJF36160CU64AE1		RLF36160CU64AE1		RKF36160CU64AE1	
2000	RGF36200CU64AE1		RJF36200CU64AE1		RLF36200CU64AE1		RKF36200CU64AE1	
2500	RGF36250CU64AE1		RJF36250CU64AE1		RLF36250CU64AE1		RKF36250CU64AE1	

#### Micrologic Harmonic Trip Unit ▲

<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 5.0H)</b>								
600	RGF36060CU73AE1		RJF36060CU73AE1		RLF36060CU73AE1		RKF36060CU73AE1	
800	RGF36080CU73AE1		RJF36080CU73AE1		RLF36080CU73AE1		RKF36080CU73AE1	
1000	RGF36100CU73AE1		RJF36100CU73AE1		RLF36100CU73AE1		RKF36100CU73AE1	
1200	RGF36120CU73AE1		RJF36120CU73AE1		RLF36120CU73AE1		RKF36120CU73AE1	
1600	RGF36160CU73AE1		RJF36160CU73AE1		RLF36160CU73AE1		RKF36160CU73AE1	
2000	RGF36200CU73AE1		RJF36200CU73AE1		RLF36200CU73AE1		RKF36200CU73AE1	
2500	RGF36250CU73AE1		RJF36250CU73AE1		RLF36250CU73AE1		RKF36250CU73AE1	
<b>3-pole, 600 Vac 50/60 Hz With LSI Trip Functions (Micrologic 6.0H)</b>								
600	RGF36060CU74AE1		RJF36060CU74AE1		RLF36060CU74AE1		RKF36060CU74AE1	
800	RGF36080CU74AE1		RJF36080CU74AE1		RLF36080CU74AE1		RKF36080CU74AE1	
1000	RGF36100CU74AE1		RJF36100CU74AE1		RLF36100CU74AE1		RKF36100CU74AE1	
1200	RGF36120CU74AE1		RJF36120CU74AE1		RLF36120CU74AE1		RKF36120CU74AE1	
1600	RGF36160CU74AE1		RJF36160CU74AE1		RLF36160CU74AE1		RKF36160CU74AE1	
2000	RGF36200CU74AE1		RJF36200CU74AE1		RLF36200CU74AE1		RKF36200CU74AE1	
2500	RGF36250CU74AE1		RJF36250CU74AE1		RLF36250CU74AE1		RKF36250CU74AE1	

#### Interrupting Ratings (kA)

	G	J	L	K
240 V	65	100	125	65
480 V	35	65	100	65
600 V	18	25	50	65

Accessories DE3-34  
Dimensions DE3-50

▲ The standard rating plug supplied with a trip unit will be the "A" rating plug. To specify an alternative rating plug, replace the "A" at the end of the catalogue number with the applicable suffix letter.

**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 eight lugs per phase. Order terminal pad kit (RLTB) and optional lugs separately.



FA100S



FA100RB



KA225DS

Circuit breaker enclosures are UL Listed, CSA Certified and are suitable for use as service entrance equipment. The short circuit current rating of an enclosed circuit breaker is equal to the interrupting rating at the supply voltage marked on the circuit breaker installed. Exceptions and restrictions are footnoted. Breakers are ordered and shipped separately for field installation. For ground bars and neutral assemblies, refer to page DE3-32.

Circuit Breaker			Type 1 Flush		Type 1 Surface		Type 3R▲	
Catalogue Number Prefix	Ampere Rating	Number of Poles	Enclosure Catalogue No.	Price	Enclosure Catalogue No.	Price	Enclosure Catalogue No.	Price
FAL, FHL, FCL	15-100	1, 2, 3	FA100F		FA100S		FA100RB	
QBL, QDL, QGL, QJL	100-225	2, 3	Q23225NFC†		Q23225NSC†		Q23225NRBC†	
HDL,HGL,HJL, HLL* JDL, JGL, JJL, JLL*	15-150 150-250		J250F		J250S		J250R	
KAL, KHL, FCL, FAL, FHL	70-225	2, 3	KA225F		KA225S		KA225RB	
LAL, LHL, Q4L KAL, KHL	125-400	2, 3	LA400F		LA400S		LA400R	
MG, MJ, PG, PJ, PL PG, PJ, PL	300-800 600-1200	2, 3 2, 3			M800S P1200S		M800R P1200R	

▲ Enclosures with NRB or RB suffix have provisions for 3/4" through 21/2" bolt-on hubs in top endwall. Enclosures with R suffix have blank endwalls and require field cut opening.

† Factory installed groundable neutral assembly includes (2) ground lugs and (2) neutral lugs. Equipment ground kit is also included.

Circuit Breaker			Type 4, 4X, 5 Stainless Steel		Without Knockouts* (Type 12/3R)	
Catalogue Number Prefix	Ampere Rating	Number of Poles	Enclosure Catalogue No.	Price	Catalogue No.	Price
FAL, FHL, FCL	15-100	1, 2, 3	FA100DS		FA100AWK	
KAL, KHL▲, FIL■	20-225	2, 3	KA225DS		KA225AWK	
HDL,HGL,HJL, HLL*	15-150		J250DS		J250AWK	
JDL, JGL, JJL, JLL*	150-250		IK250DS		IK250AWK	
KIL■, KCL, KAL, KHL	110-250		LA400DS		LA400AWK	
LAL, LHL, Q4L	125-400	3			LX600AWK	
LEL◆, LXL, LXIL	100-600				LX600AWK	
LCL, LIL	300-600	2, 3			M800AWK	
MG, MJ, PG, PJ, PL PG, PJ, PL	300-800 600-1200		M800DS		P1200AWK	

\* Suitable for rainproof Type 3R application by removing drain screw from bottom endwall.

▲ Wire bending space provided for 250 kcmil (Al/Cu) 75°C conductors maximum.

◆ LEL 100% rated circuit breaker except for 600 Amp frame.

■ Short circuit rating is 100,000 AIR at 480Vac maximum.

\* HLL & JLL breakers in the J250 enclosures are rated for 240Vac only.



FA100X



FA100Y

Circuit Breaker			Type 7* Cast Aluminum		Type 9■ Cast Aluminum	
Catalogue Number Prefix	Ampere Rating	Number of Poles	Enclosure Catalogue No.	Price	Enclosure Catalogue No.	Price
FAL, FHL▲	15-60	1, 2, 3	FA060X▼		FA060Y①	
	15-100	1, 2, 3	FA100X▼		FA100Y①	

\* NEMA Type 7 – Indoor Hazardous Locations – Class I, Groups C and/or D, Divisions 1 or 2.

■ NEMA Type 9 – Indoor Hazardous Locations – Class II, Groups E and/or G, Class III, Divisions 1 or 2.

▼ Suitable for rainproof applications—includes PKDB-1 breather and drain kit.

▲ Use 75°C Cu conductors only.

① Not CSA certified

Note: Circuit breaker enclosures not to be used with MAG-GARD breakers.

Accessories - DE3-28  
Dimensions - DE3-28

# Moulded Case Circuit Breakers

## Enclosures—Accessories, Dimensions

### Accessories

#### 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 FAL, FHL, FIL	100 100	SN100FA —	—	SN100FA —	—	— 100SNA	—	(4) 14–1/0 Cu or (4) 12–1/0 Al 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 HDL,HGL,HJL,HLL JDL,JGL,JJL,JLL	15–100 125–150 150–250	SN100FA SN400LA SN400LA	— — —	SN100FA SN400LA SN400LA	— — —	— — —	— — —	(4) 14–1/0 Cu or (4) 12–1/0 Al (2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu (2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu
KAL, KHL KAL, KHL, KIL, KCL KAL, KHL KAL, KHL, KIL, KCL	225 225 225 250	SN225KA — — —	— — — —	SN225KA — — SN400LA	— — — —	— — — 225SNA	— — — —	(2) 4–300 Al/Cu, plus (2) 14–1/0 Al/Cu (2) 4–300 Al/Cu, plus (2) 14–1/0 Al/Cu (4) 6–300 Cu (2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu
LAL, LHL, Q4L LAL, LHL, Q4L, LCL, LIL LXL, LXIL	400 400	400SN —	— —	— SN400LA	— —	— —	— —	(2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu (2) 1–600 or (4) 1–250 Al/Cu, plus (2) 4–300 Al/Cu
LCL, LIL, LXL ■, LXIL ■	400	—	—	SNC400LX ◆	—	—	—	(2) 2–600 Cu, plus (2) 6–250 Cu
LCL, LXL LIL, LXIL, LEL	600	—	—	SNC800LX ◆	—	—	—	(4) 2–600 Cu, plus (1) 2–4/0 Cu
MG, MJ ▼	300–800 A	AL800SN	—	AL800SN	—	AL800SN	—	(6) 3/0–500 Al/Cu, plus (2) 6–250 Al/Cu
PG, PJ, PL □	600–1200 A	SN1200	—	SN1200	—	—	—	(8) 750 Max. Al/Cu, plus (2) 350 Max. Al/Cu

◆ All Cu neutral assembly.

▼ For 200% neutral applications order Jumper kit SN800SNI and 2 of kit SN1200.

□ For applications with integral ground fault protection order Neutral Mounting Kit S33576MK and Neutral CT on page DE3-34.

#### Equipment Ground Kits

Circuit Breaker Cat. No. Prefix	Ground Bar Cat. No.	Number of Terminals	Conductors Per Terminal	Wire Range AWG/kcmil	Price
QBL, QDL, QGL, QJL FAL, FHL, FCL, FIL, KAL, KHL, KCL, KIL, LAL, LHL, Q4L	PK0GTA2	2	1	10–2/0 Cu or 6–2/0 Al	
HDL,HGL,HJL,HLL,JDL,JGL,JJL,JLL	PK0GTJ250	2	1	6–300 Al/Cu	
LCL, LEL, LIL, LXL, LXIL MG, MJ PG, PJ, PL	PK0GTA4	4	1	6–250 Al or Cu	

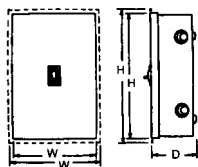
#### Dimensions (inches)

Cat. No.	Series	Approximate Dimension					
		H		W		D	
		in.	mm	in.	mm	in.	mm
FA060X ◆	E1	16.00	406	9.88	251	7.00	178
FA060Y ◆	E1	16.00	406	9.88	251	7.00	178
FA100AWK	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
FA100X ◆	E1	16.00	406	9.88	251	7.00	178
FA100Y ◆	E1	16.00	406	9.88	251	7.00	178
IK250AWK	E2	42.25	1073	13.88	353	7.50	191
IK250DS	E2	42.25	1073	13.88	353	7.50	191
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
J250AWK	A01	32.26	819	9.72	247	7.94	202
KA225AWK	E2	25.25	641	9.50	241	5.38	137
KA225DS	E2	25.25	641	9.50	241	5.38	137
KA225F	E2	29.88	759	13.75	349	5.38	137
KA225RB	E2	28.38	721	12.50	318	6.13	156
KA225S	E2	28.50	724	12.38	314	5.38	137

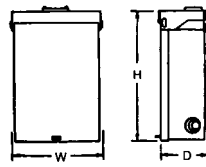
#### Dimensions (inches)

Cat. No.	Series	Approximate Dimension					
		H		W		D	
		in.	mm	in.	mm	in.	mm
KA225X ◆	C2	22.63	575	10.88	276	7.75	197
KA225Y ◆	A2	21.88	556	11.00	279	7.50	191
KA250SWB	E2	20.00	508	19.00	483	5.63	143
KA250RWB	E2	20.25	514	19.00	483	7.12	181
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
LX600AWK	E3	57.50	1461	20.38	518	8.25	210
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
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
Q2220NRB	E3	23.38	594	7.63	194	4.75	121
Q2220NS	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

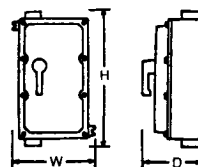
◆ Tapped conduit opening, top and bottom endwall: FA060X/Y–3/4", FA100X/Y–1-1/4", KA225X/Y–2-1/2".



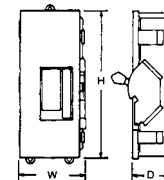
Type 1  
Q2, FA, J, KA, LA, MG, PG



Type 3r  
Q2, FA, J, KA, LA, MG, PG



Type 7, Type 9  
FA, KA



Type 4, 4X, 5, 12, 12K  
Ik, FA, J, KA, LA, LX, MG, PG

# Moulded Case Circuit Breaker Electrical Accessories

Factory Installed

Electrical accessories are available on all moulded case circuit breakers except Q, QO Moulded Case Switches, and QOB-VH (125A - 150A). Factory installed accessories take up an additional pole space on QO, QOU, QO-GFI, QO-EDP and QO-PL circuit breakers. To order, add suffix number to circuit breaker catalogue number. Example: FAL 360151021.

Accessory	Description	QO, QOB, & QOU Circuit Breakers ■				Industrial Circuit Breakers			
		Rated Voltage	Coil Burden	Suffix	Price	Rated Voltage	Coil Burden	Suffix	Price
<b>Shunt-Trip</b>	Trips the circuit breaker electrically using a remote control source. Device includes a coil clearing contact. Minimum voltage on AC systems is 55% of rated voltage, minimum voltage on DC systems 75% of rated voltage.	<u>AC</u>				<u>AC</u>			
		24	60VA	1042		24	21VA	1042◇	
		120	72VA	1021		120	29VA	1021	
		208	228VA	1021		208	107VA	1021	
		240	288VA	1021		240	154VA	1021	
	<u>Application</u> • For use with momentary or maintained push button. • Not available on QO-GFI, QO-EDP or Q12150. • QO breakers have terminals to accept (2) #14-#12 Cu. • Industrial breakers have (2) black #16 Cu. leads.	<u>AC/DC</u>				<u>DC</u>			
		12	60VA	1042		24	36VA	1027	
		24	168VA	1042		48	36VA	1028	
						125	44VA	1029	
						250	15VA	1030▲	
<b>Ground Fault Shunt-Trip</b>	Trips the breaker electrically using the signal from a MICROLOGIC® Ground fault module. Order GFM from page DE3-41.							G▲	
	<u>Application</u> • For use only with MICROLOGIC® ground fault module. • Industrial breakers have (2) orange #18 Cu. leads.								
<b>Under-Voltage Trip (UVT)</b>	Trips the breaker electrically when a control circuit falls below 35 - 70% of nominal voltage (not field adjustable). Picks up at 35 - 85% of nominal voltage. <u>Application</u> • UVR must be energized in order to close the circuit breaker. • Industrial breakers have (2) brown #18 Cu. leads	-				AC			
						24	5VA	1143▲	
						120	8VA	1121	
						240	8VA	1124	
						DC			
					24	2VA	1127		
					48	3VA	1128		
<b>Time Delay Unit</b>	Provides adjustable time delay for UVR of .1 seconds - .6 seconds before circuit breaker trips.	-				120Vac	Unit Mount	I-Line Mount	
	For use with 120 Vac UVT only <u>Application</u> • Adjustable - for use with 120Vac undervoltage trip (UVT) • I-LINE unit requires 1.5" of mounting space. • Color code: brown leads. (size)						690-UVTD	690-UVTD1	
<b>Auxiliary Switches</b>	Used for control circuits associated with circuit breaker operation. Auxiliary switch contains 1, 2 or 3 snap switches each with 1 "A" contact (N.O.) & 1 "B" contact (N.C.).	1A	120	1200	-	<u>AC/DC</u>	-	-	
	<u>Application</u> • Breakers have # 18Cu. leads, yellow for "A" contacts, blue for "B" contacts and striped for common.	1B	120	1201	-	-	-	-	
	• Electrical ratings:	1A & 1B	-	-	-	250	-	1212	
	<u>QO, QOB, &amp; QOU</u> <u>LA</u>	2A & 2B	-	-	-	250	-	1352	
	5A @ 120Vac      15A, .25HP @ 125-250Vac								
	<u>FA, KA, FI, KI, LI</u> .5A @ 125Vdc	3A & 3B	-	-	-	250	-	1364*	
	11A, .25HP @ 125-250Vac      .25A @ 250Vdc								
5A @ 30Vdc      5A Lamp load @ 125Vdc									
<b>Alarm Switches</b>	Used with control circuits and is actuated only when the breaker has tripped. Standard construction includes a double throw N.O. contact.	1A	<u>AC</u>	120	2100	<u>AC/DC</u>	250	-	2100
	<u>Application</u> • QO breakers have terminals to accept (2) #14-#12 Cu. • Industrial breakers have (2) red #18 Cu. leads.	1B				250			2103
	• Electrical ratings: 7A @ 250Vac, 7A(res) @ 28Vdc, 4A(ind) @ 28Vdc (min. 10Vac/DC)	1A				DC	28	-	2100
		1B				28			2103
<b>Visi-Blade Breaker</b>	Allows the position of the contacts to be seen through a clear window. Not available on Q, FA/FH (1P), FI, KI, LI & P frame breakers.			N/A*	-	-		V	

◇ Not available on FI, KI, or KC.

▲ Not available on LC, LE, LI, LX, or LXI circuit breaker.

\* Not available on FA, FC, FH, FI, or KI circuit breaker.

\* QO, QOB & QOU c/w visi-trip® as standard.

■ QO breakers will accept only one accessory per circuit breaker.

Note: Contact your local Schneider Electric sales office for multiple accessory selection.

# Moulded Case Circuit Breakers

## Electrical Accessories

### Field Installed

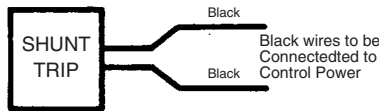
Complete field installable accessory catalogue number by inserting suffix from page DE3-29 in between the parentheses in the catalogue numbers shown in the table below. For example, to order a 120V shunt-trip kit for an LAL breaker order LA1(1021).

Breaker	Shunt-Trip	Ground-Fault Shunt-Trip	Under Voltage Trip	Auxilliary Switches	Alarm Switch
Miniature Circuit Breakers (QO, QOB, QOU)	Factory Installed Only	Not Available	Not Available	Factory Installed Only	Factory Installed Only
FA, FC, FH, FI KA, KC, KH, KI	Factory Installed Only				
LA, LH (SERIES 4)	LA1( )	LA1G	LA1( )	LA1( )	Factory Installed Only
LE, LX, LXI, LC, LI	LC1( )	Not Available	LC1( )	LC1( )	Factory Installed Only
Q4	LA1( )	LA1G	LA1( )	LA1( )	Factory Installed Only

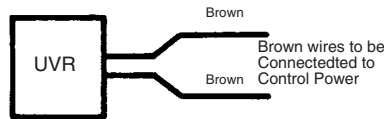
◊120V Under-Voltage Trip. Mounts in left port only.  
 †240V Under-Voltage Trip. Mounts in left port only.

DE3 CIRCUIT BREAKERS

**SHUNT TRIP WIRING DIAGRAM**



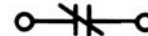
**UNDERVOLTAGE TRIP WIRING DIAGRAM**



### AUXILIARY SWITCH CONTACT CONFIGURATION

Colour Code:  
 "A" — Yellow Leads  
 "B" — Blue Leads  
 Common — Striped Leads

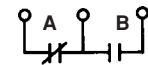
"A" CONTACT  
 Breaker Closed



"B" CONTACT  
 Breaker Closed



1A/1B  
 Breaker Closed



### ALARM SWITCH CONFIGURATION

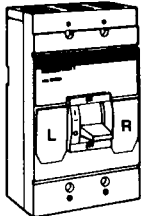
Colour Code: Red Leads  
 Breaker Open or Closed



Breaker Tripped



### Field Installed Accessory Mounting Locations



#### LA, LC, LE, LH, LI, LX, LXI & Q4

Both ports (L-left) & (R-right) will accept shunt-trips, UV Trips, and auxilliary switches. Alarm switches are factory installed only. Maximum 1 device per port.

# Moulded Case Circuit Breaker Field Installed Mechanical Accessories

## Electrical Operators, Handle Accessories, Mechanical Interlocks, Cylinder Locks.



KAM02120AC  
WITH KAL Circuit Breaker

### Cylinder Lock

Used to lock the breaker in the "OFF" position.  
Breaker cannot be reset when locked off.

Breaker Prefix	Catalogue Number Factory Inst. Suffix	Field Inst.	Price
FA, FAL, FH, FHL, KA, KAL, KH, KHL	CL■	Factory Installed Only	
LA, LAL LH, LHL, Q4	Field Installable Only	LA1CL	

■ Not available on Mag-Gard Breakers.

### Electrical Operators

Provides remote ON, OFF/RESET control of moulded case circuit breakers.

- A complete line of field installable electrical operators.
- Not applicable on LE/LX, ME/MX or NE/NX circuit breakers.
- Installing side mounted motor operators requires the use of a separate mounting pan.
- Side mounted electrical operators require an additional 4 1/2" of mounting space in I-LINE® installations

Breaker Prefix	Top Mount			Side Mount			Mounting Pan	
	Voltage	Catalogue No.	Price	Voltage	Catalogue No.	Price	Catalogue No.	Price
FA, FH, FC	...	...	...	120Vac	FAM01		...	...
FAL, FHL, FCL	...	...	...	120Vac	FAM01		FAMOP	
FI, KI, KA, KH, KC	...	...	...	120Vac	KAM01		...	...
FIL, KIL	120Vac	KAM02120AC		120Vac	KAM01		KAMOP	
KAL, KHL,	240Vac	KAM02240AC						
KCL	24Vdc	KAMO224DC		125Vdc	KAMO2125DC			
LA, LH, Q4	...	...	...					
LAL, LHL, Q4L	120Vac 240Vac 24Vdc 125Vdc	LAM02120AC LAM02240AC LAMO224DC LAMO2125DC		120Vac	LAM01		...	...
				120Vac	LAM01		LAMOP	

### Handle Accessories

Breaker Prefix	No. of Poles	Catalogue No.	Price	Breaker Prefix	No. of Poles	Catalogue No.	Price
<b>Handle Padlock Attachment (Locks on or off)</b>				<b>Handle Tie</b>			
QB, QD, QG, QJ	2,3	QBPA, QBPAF*		(2)FA	3	FKHT	
FA, FH, FC, FI, KA, KH, KC, KI	1, 2, 3 2, 3	HPAFK HPAFK		(2)KA, (2)FI, (2)KH (2)KI, or (1)FI + (1)KI	2, 3	FKHT	
LA, LH	2, 3	HPALM		(2)LA or (2)Q4	2, 3	LAHT	
LC, LE, LI, LX, LXI	2, 3	AHPALI					
<b>Handle Extension</b>							
LA, LC, LH, LE, LI, LX, LXI, Q4	2, 3	AHEXLI					

\* Locks OFF only

### Front Mounted Mechanical Interlock

Breaker Prefix	No. of Poles	Catalogue No.	Price
Q2, QB, QD, QG, GJ	2,3	QBMIK	

### Walking Beam Mechanical Interlock Components

Circuit Breaker		Price	Walking Beam Ass'y.		Mounting Pan	
Prefix	Suffix	Adder	Catalogue No.	Price	Catalogue No.	Price
<b>Manually Operated</b>						
Q	-		QBMIK		-	
FAL, FHL	WB		FA4WB		FA-WBP4	
KAL	WB		KA4WB		KA-WBP4	
LAL, LHL	WB		LA6WB		LA-WBP6	
<b>Electrically Operated</b>						
FAL, FHL	WBMO		FA9WB		FA-WBP9	
KAL	WBMO		KA9WB		KA-WBP9	
LAL, LHL	WBMO		LA10WB		LA-WBP10	



Walking Beam Mechanical Interlock

Requires two circuit breakers with WB suffix, one walking beam assembly and one mounting pan.

# Moulded Case Circuit Breakers

## Accessories

Used with HD, HG, HJ, HL, JD, JG, JJ, JL, DG, DJ, DL Circuit Breakers

### Rear Connections

Device	Description	H-Frame				J-Frame				D-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	32477	
		3	S	S37432		3	S	S37437		4	S	32478	
Consisting of:	Short rear connections (set of 2)	2 or 3	—	2x S37433 ▼	2 or 3	—	2x S37438 ▼	3	—	3	—	2x 32475 ▼	
	Long rear connections (set of 2)		—	S37434		—	S37439 ◆		—		32476		
	Short terminal cover (3P)	3	—	S37436	3	—	S37440	3	—	32562			

◆ For use with 3P circuit breakers only.

▼ Price shown is for quantity one.

### Plug-in and Drawout Mountings for H- and J-Frame Circuit Breakers (3P only)

Description		Factory Installed Cat. No.	Field-Installed Cat. No.	
Complete Factory-assembled Circuit Breakers	Plug-in Base shipped with Circuit Breaker	N		
	Drawout Cradle Shipped with Circuit Breaker	D		
Special Order Options for Plug-in and Drawout Circuit Breakers	Plug-In Base	HJ00	S29278	
	Circuit Breaker Only			
	Drawout Cradle	S29282	S29283	
	Circuit Breaker Only			
Accessories for Plug-in and Drawout	H-frame Shutter Kit (set of two)		S37442	
	J-frame Shutter Kit (set of two)		S37443	
	Secondary Disconnect Blocks	Fixed part 9-wire Connector (mounted on base)		S29273
		Moving part 9-wire Connector (mounted on circuit breaker)		S29274
		Support for 2-moving Connectors		S29275
Extended escutcheon for toggle handle		S29284		
Two position indicating switches (connected/disconnected)		S29287		

### Locks, Interlocking

Device	Description	H- and J-Frame	D-Frame
		Field-Installed Cat. No.	Field-Installed Cat. No.
Handle Padlocking Device	Removable (lock OFF or ON)▲	—	—
	Removable (lock OFF only)	S29370	29370
	Fixed (lock OFF or ON)▲	S29371	S32631
	Fixed (lock OFF only)	S37422	NJPAF
Interlocking (Not UL listed)	Mechanical for circuit breakers with rotary handles▲	S29369	32621
	Mechanical for circuit breakers with toggles▲	S29354	32614

▲ Not available in HD and HG 2P modules.

### Plug-in and Drawout Mountings for D-frame Circuit Breakers

Description	Poles	Plug-in Mounting		Drawout Mounting	
		Factory Installed Cat. No.	Field-Installed Cat. No.	Factory Installed Cat. No.	Field-Installed Cat. No.
Kit (stationary and moving parts)	3	N	32546	D	32548
	4	N	M32574	D	M32549
Stationary Part	3		32514		32514
	4		M32515		M32515
Moving Part		HJ00		HJ00	
					32532
					32533
					32563
Power connections	3		3x 32518▲		3x 32518▲
	4		4x 32518▲		4x 32518▲
	3		32562		32562
	4		32563		32563

▲ Price shown is for quantity of 1.

### Plug-in and Drawout Accessories for D-frame Circuit Breakers

Description			Field-Installed Cat. No.
Secondary Disconnecting Blocks	Fixed Part	9-wire connector	29273
	Moving Part	9-wire connector	32523
		Support for 3 moving connectors	32525
Shutters	Two shutters for plug-in base		32521
	Extended escutcheon for toggle		32534
Chassis Accessories	Locking device (key lock is not included)		29286
	Two position indicating switches (connected/disconnected)		29287

### Installation Accessories for H-, J-, and D-frame Circuit Breakers

Description	H- and J-Frame	D-Frame
	Field-Installed Cat. No.	Field-Installed Cat. No.
Front Panel Escutcheon for Toggle Breakers	S29315	32556
Front Panel Escutcheon for Rotary Handle, Motor Operator, or extended escutcheon	S29317	32558
Phase Barriers (set of 6)	S29329	32570
Handle Rubber Boot■	S29319	32560
Sealing Accessories	29375	29375
DIN rail mounting kit (requires 15 mm depth on a 35 mm DIN rail)■	S29305	—
DIN rail adapter	—	—
Toggle Extensions (set of 10)	S29313	—

■ Not available in HD and HG 2P modules.

### Rotary Operated Handles

Device	Description	H- and J-Frame▲		D-Frame		
		Factory Installed Cat. No. Suffix	Field Installable Cat. No.	Factory Installed Cat. No. Suffix	Field Installable Cat. No.	
Direct Mounted	Standard Handle Black	RD10	S29337	—	32597	
	Standard Black Handle with	Two early-break and two early make switches	—	—	—	—
		One early-break switch	RD12	S29345	—	—
		Two early-make switches	RD13	S29346	—	—
	Red handle on yellow bezel	One early-break switch	RD20	S29339	RD22	32599
		Two early-make switches	RD22	S29345	—	—
RD23			S29346	—	—	
MCC Conversion Accessory	—	—	—	32606		
Door Mounted	Standard black handle	RE10	S29338	RE12	32598	
	Standard Black Handle with	—	—	—	—	
	Red handle on yellow bezel	RE20	S29340	RE22	32600	
Rotary Handle Replacement Kit	—	S33875	—	S33875		
Telescoping	—	RT10	S29343	RT12	—	

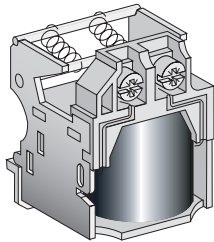
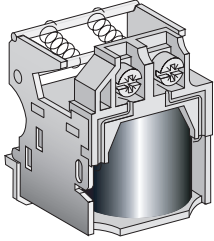
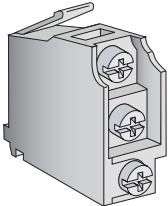
▲ Not available in HD and HG 2P modules.



Used with HD, HG, HJ, HL, JD, JG, JJ, JL, DG, DJ, DL Circuit Breakers

DE3 CIRCUIT BREAKERS

### Molded Case Circuit Breaker Electrical Accessories

Accessory	Description	Rated Voltage	Coil Burden	Factory Installed	Field Installed	Price
				Catalogue Suffix	Catalogue Number	
 <p>Shunt trip</p>	Trips the circuit breaker from a remote location by means of a trip coil energized from a separate circuit	AC	<10 VA	SK	S29384	
				SL	S29385	
				SA	S29386	
				SD	S29387	
				SH	S29388	
				SJ	S29389	
		DC	< 5 W	SN	S29382	
				SO	S29390	
				SU	S29391	
				SP	S29392	
				SV	S29393	
				SR	S29393	
				SS	S29394	
				250	S29394	
 <p>Undervoltage Trip</p>	Instantaneously opens the circuit breaker when its 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	<5 VA	UK	S29404	
				UL	S29405	
				UA	S29406	
				UD	S29407	
				UH	S29408	
				UJ	S29409	
		DC	<5 W	UN	S29402	
				UO	S29410	
				UU	S29411	
				UP	S29412	
				UV	S29403	
				UR	S29413	
				US	S29414	
				250	S29414	
Auxiliary and Alarm Switches	Standard	One auxiliary switch (OF)	AA	S29450		
 <p>Provides circuit breaker contact status.</p>	Min. Load = 10 mA with 24 V	Two auxiliary switch (OF)	AB	S29450(2)		
		Alarm switch (SD)	BC	S29450		
		Overcurrent trip switch (SDE)	BD			
		Consisting of:	OF Switch		S29450	
			SDE Adapter		S29451	
		Alarm switch and overcurrent trip switch	BE			
		Low Level	One auxiliary switch (OF)	AE	S29452	
			Two auxiliary switch (OF)	AF	S29452(2)	
		Min. Load = 1 mA with 24 V	Alarm switch (SD)	BH	S29452	
			Overcurrent trip switch (SDE)	BJ		
			OF Switch		S29452	
			SDE Adapter		S29451	
			Alarm switch and overcurrent trip switch	BK		

### Maximum Accessory and Switch Combinations

Poles	Frames	Device	Switch and Alarm Combinations		
3-pole	HD,HG,HJ,HL,JD,JG,JJ,JL	Shunt Trip or Undervoltage Release	2A/2B Aux Swith (OF) + Alarm (SD) + Overcurrent Trip (SDE)		
2-pole	HJ,HL,JD,JG,JJ,JL	Shunt Trip or Undervoltage Release	2A/2B Aux Swith (OF) + Alarm (SD) + Overcurrent Trip (SDE)		
2-pole	HD,HG	Shunt Trip or Undervoltage Release	1A/1B Aux Switch (OF) + Alarm (SD)		
Motor Operator	H-frame 150 A▲	AC	48/60	ML	S29440
			110/130	MA	S29433
			208/277	MD	S29434
			380/480	MH	S29435
		DC	24/30	MO	S29436
			48/60	MP	S29437
			110/130	MR	S29438
			250	MS	S29439
	J-frame 250 A	AC	48/60	ML	S31548
			110/130	MA	S31540
			208/277	MD	S31541
		DC	380/480	MH	S31542
			24/30	MO	S31543
			48/60	MP	S31544
	110/130	MR	S31545		
	250	MS	S31546		
	Motor Operator Adapter for I-Line		S37420		

▲ Not available in HD and HG two-pole rating (2-pole module)

# Moulded Case Circuit Breakers

## Accessories

### Used with PG, PJ, PK, PL, RG, RJ, RK, RL Circuit Breakers



#### Adjustable Rating Plugs—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.

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

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 catalog number (after specifying trip unit options). Adjustable rating plugs may also be purchased as field-installable components from the table below.

#### Assembled with Trip Unit

Rating Plug	Catalog Suffix	Price Adder
A	A (standard)	
B	B	
C	C	
D	D	
E	E	
F	F	
G	G	
H	H	

#### Field-installable Component

Rating Plug	Catalog Number	Price
A	S48818	
B	S48819	
C	S48820	
D	S48836	
E	S48837	
F	S48838	
G	S48839	
H	S48840	

#### Notes:

- 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 ampere between the plug setting and .40 X Sensor Rating.

#### Neutral Current Transformers

For use with circuit breaker	Catalog Number	Sensor	Price
P-frame	S33575 S33576	250 400–1600	
R-frame	S48916 S34036 S48896 S48182	250 400–1600 2000 2500	

#### Special Options

Description	Factory Installed Suffix	Field-installed Catalog Number	Price
Ship circuit breaker in closed position	YK	N/A	
CT Characterization (Calibrated trip system)	Q	N/A	
External Voltage Sensing	YV	N/A	

#### Trip Unit Accessories

Device	Catalog Number	Price
6 Programmable Contact Module	Factory-installed Suffix W	
Circuit Breaker Communication Module (Modbus®)	Factory-installed Suffix EI	
Hand-held Test Kit	S33594	
Full-function Test Kit	S33595	
Seven-pin Test Cable (for connection between test kit and trip unit)▲	S48907	
Two-pin Test Cable (for connection between test kit and trip unit)■	S48908	
230 Vac Filtered Power Cord◆	S48856	
120 Vac Filtered Power Cord◆	S48855	
Trip Unit Battery for Trip Indicator Lights	S33593	
Power supply with: 24–30 Vdc input 48/60 Vdc input 125 Vdc input 110–130 Vac input 200–240 Vac input 380–415 Vac input	685823 685824 685825 685826 685827 685829	
Battery Back-up (12 Hours)	685831	

- ▲ 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.

#### Trip unit field-installed accessories

Description	Field-installed Kit Catalogue Number							Price
	P-frame					R-frame		
	Unit Mount	I-line	Motor Operated	Drawout	With Rotary Handle	Unit Mount	I-line	
Circuit breaker Communication Module (BCM)	S64205	S64205	S64207	S64206	S64205	S64205	S64205	
6 Programmable Contacts Module (M6C)	S64204	S64204	S64204	S64202	S64204	S64201	S64201	
External Voltage SENSING (EVS)	S64203	S64203	S64210	S64209	S64210	S64208	S64208	

#### Electrical Accessories

Description	Rated Voltage	Coil Burden Holding/Inrush (VA)	Factory-installed	Field-installed	Price
			Catalogue Suffix	Catalogue Number	
<b>Shunt Trip or replacement of standard opening/closing coil for electrically operated P-frame</b>					
Trips the circuit breaker from a remote location by means of a trip coil energized from a separate circuit.	12 DC 24/30 AC/DC 48/60 AC/DC 100/130 AC/DC 200/250 AC/DC 277 AC 380/480 AC	4.5/200	SN SK SL SA SC SD SH	S33658 S33659 S33660 S33661 S33662 S33663 S33664	
<b>Replacement of communicating opening/closing coil for electrically operated P-frame</b>					
Open or close the circuit breaker from a remote location by means of a trip coil energized from a separate circuit.	12 DC 24/30 AC/DC 48/60 AC/DC 100/130 AC/DC 200/250 AC/DC 277 AC 380/480 AC	4.5/200	EN EK EL EA EC ED EH	S33032 S33033 S33034 S33035 S33036 S33037 S33038	
<b>Undervoltage Trip</b>					
Instantaneously opens the circuit breaker when its 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.	24/30 AC/DC 48/60 AC/DC 100/130 AC/DC 200/250 AC/DC 380/480 AC	4.5/200	UK UL UA UC UH	S33668 S33669 S33670 S33671 S33673	
<b>Time Delay Unit</b>					
Undervoltage trip with separately mounted adjustable time delay unit. Provides adjustable time delay for UVFR of 0.5, 0.9, 1.5 and 3.0 seconds before breaker trips.	48/60 AC/DC 100/130 AC/DC 200/250 AC/DC 380/480 AC	4.5/200	FL FA FC FH	S33680▲ S33681▲ S33682▲ S33683▲	
Undervoltage trip with separately mounted non-adjustable time delay unit. Provides time delay of 0.25 seconds before breaker trips.	100/130 AC/DC 200/250 AC/DC	4.5/200	KA KC	S33684▲ S33685▲	
<b>Auxiliary Switches (OF)</b>					
Monitors circuit breaker contact status and provides a remote signal indicating the circuit breaker contacts are OPEN or CLOSED. <b>Application</b> • Min. Load = 10 mA with 24 V (Standard) • Min load = 1 mA with 4 V (Low Level)	1A/1B Aux Switch 2A/2B Aux Switch 3A/3B Aux Switch	See load info in App. text at left.	See load info in App. text at left.	AA AB AC	S29450 2xS29450 3xS29450
	1A/1B Low Level 2A/2B Low Level 3A/3B Low Level	See load info in App. text at left.	See load info in App. text at left.	AE AF AG	S29452 2xS29452 3xS29452
<b>Alarm Switches/Overcurrent Trip Switches (SD, SDE♦)</b>					
Used with control circuits and actuated only when the circuit breaker has tripped. <b>Application</b> • Min. Load = 10 mA with 24 V (Standard) • Min. Load = 1 mA with 4 V (Low Level)	SD Alarm Switch SDE Overcurrent Trip Switch SDE + SD SD Low Level SDE Low Level SD LL + SDE LL	See load info in App. text at left.	See load info in App. text at left.	BC BD BE BH BJ BK	S29450 S29450 2xS29450 S29452 S29452 2xS29452

#### Motor Assembly for P-frame Circuit Breakers (Not compatible with SD Bell Alarm Switch)

Description	Rated Voltage	Factory Installed Suffix	Spring Charging Motor★	Price
Standard motor for electrically-operated circuit breakers.	AC	48	ML	S47391
		100-130	MA	S47395
		220-240	MC	S47396
	DC	380/415	MF	S47398
		24-30	MO	S47390
		48-60	MV	S47391
Communicating motor mechanism for electrically-operated circuit breakers.	AC	100-130	MR	S47392
		200-250	MS	S47393
		48	NL	S47391
	DC	100-130	NA	S47395
		220-240	NC	S47396
		380/415	NF	S47398
DC	24-30	NO	S47390	
	48-60	NV	S47391	
	100-130	NR	S47392	
	200-250	NS	S47393	

★ Spring charging motor is for field replacement only, they are not field-installable.

#### Operating Handles

Circuit Breaker Prefix	Directly Mounted		Door Mounted (Extended)	
	Circuit Breaker Suffix	Price	Circuit Breaker Suffix	Price
<b>Standard Black Handle</b>				
PG, PJ, PL, PK	RD10		RE10	
<b>Standard Black Handle with 2 Form C, Early Make and 2 Early Break Contacts</b>				
PG, PJ, PL, PK	RD16		RE16	

# Moulded Case Circuit Breakers

## Accessories

Used with MG, MJ, PG, PJ, PK, PL, RG, RJ, RK and RL Circuit Breakers

### Locking Accessories

Circuit Breaker Prefix	Poles	Factory-installed Suffix	Catalogue No.	Price
<b>Toggle Padlocking Device—Removable</b>				
M-, P-frame	2, 3, 4	N/A	S44936	
R-frame	2, 3	N/A	S33996	
<b>Toggle Padlocking Device—Fixed</b>				
M-, P-frame	2, 3, 4	-YP	S32631	
R-frame	2, 3			
<b>Key Locking (provisions are factory-installed only)</b>				
<b>Provision only for one lock</b>				
M-, P-frame	2, 3, 4	Kirk or Federal	-JK	...
<b>Provision and one lock</b>				
M-, P-frame	2, 3, 4	Kirk Federal Pioneer	-JL -JS	...
<b>Provision only for one or two locks</b>				
R-frame	2, 3	Kirk or Federal Ronis Profalux	-JK -JB -JD	...
<b>Provision and one lock</b>				
R-frame	2, 3,	Kirk Federal Pioneer Ronis Profalux	-JL -JS -JC -JF	...
<b>Provision and two locks keyed alike</b>				
R-frame	2, 3,	Kirk Federal Pioneer	-JN -JV	...
<b>Provision and two locks keyed different</b>				
R-frame	2, 3,	Kirk Federal Pioneer	-JP -JW	...

### Installation Accessories

Description	Circuit Breaker	Catalogue No.	Price	
Bus Connector Kit	One end, 1-pole	M-, P-frame	S33928	
Terminal Pad Kit	One end, 3-pole	R-frame	RLTB	
Replacement Handle	Standard Standard short Long	R-frame	S33997	
		M-, P-frame	S46998	
		M-, P-frame	S46996	
Phase Barriers	Set of 3	M-, P-frame	S33646	
		R-frame	S33998	
Terminal Covers	Short lug cover for 3-pole Short lug cover for 4-pole Long lug cover for 3-pole Long lug cover for 4-pole	P-frame	S33932	
			S33933	
			S33934	
			S33935	
Door Escutcheon	Accessory cover	M-, P-frame	S33718	
			R-frame	S33929
		Toggle handle	M-, P-frame	S33717
				Drawout

### Terminal Pad Kits for RG, RJ, RK and RL Circuit Breakers

Circuit Breaker Prefix	Terminal Pad Kit	
	Catalogue Number	Price
RGF, RJF, RLF	RLTB	

RGF, RJF, RKF and RLF 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 and has provisions for mounting a maximum of eight lugs per phase. Order lugs separately.

Circuit Breaker Amperage	RLTB Required for Bus Connection	RLTB Required for Cable Connection
2500 A, 100% rated	Yes	Yes
All other amperages	No	Yes

### Drawout Cradle and Accessories for P-frame Circuit Breakers

Description	Catalogue Number	Price
Drawout Cradle	Product Selector	
<b>Cradle Connectors</b>		
Front Connected Flat (FCF)	SFCF12▲	
Rear Connected T Horizontal/Vertical (RCH/RCTV)	SFCTV12 ▲	
<b>Cradle Accessories (Discount Schedule DE2F)</b>		
Modbus® cradle communication module	S33852	
Safety shutters	S48933	
Secondary disconnects terminal shield	S33763	
Cradle position switch 1a/1b Form C—Connected/test/disconnected	S33170	
Low level cradle position switch 1a/1b Form C—Connected/test/disconnected	S33171	
Cell keying kit	S33767	
Disconnected position key locking—provision for Kirk or Federal Pioneer Lock	S33772	
Door interlock kit	S33786	
Racking interior kit	S33788	
Door escutcheon (for replacement only, included with circuit breaker)	S33857	
Transparent cover	S33859	
Push-in terminal kit (3 wires)	S33098	
Push-in terminal kit (6 wires)	S33099	
Finger cluster	S33166	
Cluster grease (12 oz. tube)	S48899	

▲ Need 2 kits per cradle.

## Ground-fault Protection Equipment



The Micrologic ground-fault module (GFM) is a CSA certified UL Listed circuit breaker accessory for equipment protection. It is a combination ground-fault relay and ground-fault sensing device.

### Micrologic Add-on Ground-fault Module Features:

- A shunt trip may be field-installed in the HD, HG, HJ, HL, JD, JG, JJ and JL circuit breakers.
- Shunt trip S29382 (12 Vdc) for circuit breaker may be factory- or field-installed
- Adjustable ground-fault pickup levels
- Adjustable ground-fault time delays
- Integral ground fault push-to-test feature and ground-fault indicator
- All GFMs are supplied for I-Line® mounting, easily convertible to unit mount by removing the I-Line brackets
- Optional neutral current transformer for 3-phase 4-wire applications. Refer to instructions for proper installation
- Zone-selective interlocking capability is standard with upstream Micrologic trip system circuit breakers. The GFM can also be zone interlocked with the GC ground-fault system by using a restraint interface module. See Supplementary Digest
- 120 Vac control power is required for integral test feature.

**NOTE:** Ground-fault modules cannot be reverse fed.

### Module/Enclosure Selection Chart

Companion Circuit Breaker Prefix	Catalogue Number ■	Enclosure Space Required		Ground-fault Pickup Adjustment Range	GFM Price
		I-Line Switchboard			
HD, HG, HJ, HL	GFM150HD	LA		20–100 A	
JD, JG, JJ, JL	GFM250JD	LA		40–200 A	
<b>Accessories</b>					
H & J	GFM25CT	Optional Neutral Current Transformer (required for 4-wire systems)			

■ See below for additional GFMs.

The MICROLOGIC® Ground Fault Module (GFM) is a CSA certified and UL listed circuit breaker accessory. It is a combination ground fault relay and ground fault sensing device. The GFM is a self-powered ground fault sensing device that signals a circuit breaker ground fault shunt-trip. It is available for use with unit mount or I-Line construction breakers. Fewer components are required at the branch level since the GFM eliminates the need for a control test panel and relay device. The integral Push-To-Test button allows testing at the job site and eliminates the need for costly primary injection testing. The GFM uses electronic circuitry to provide branch circuit ground fault protection using a compact module that mounts directly to the OFF end lugs of the circuit breaker. By eliminating the need for wiring external ground fault relays and sensors, the GFM saves space and reduces labor costs.

### Standard Features Include ...

- All GFMs supplied for I-Line mounting, are easily converted by removing the I-Line brackets.
- All GFMs must be used with a 3-pole breaker.
- Up to 200,000A short circuit withstand rating at 240 and 480Vac. Up to 100,000A short circuit withstand rating at 600Vac.

### Adjustable ground fault pickup settings

GFM 100FA and GFM100FI modules are adjustable from 20A through 100A. GFM250 module is adjustable from 40A through 200A.

### Adjustable ground fault delay settings

Actual time delay varies with the magnitude of the ground fault.

### Sealable adjustments

A clear plastic shield that fits over posts protruding from the module can be sealed by attaching a sealing wire through the hole in the posts.

### Integral Push-To-Test button

A button on the face of the GFM allows testing of the ground fault system without the need for any peripheral equipment. (Separate 120 Vac required for Push-to-Test)

### Zone selective interlocking

Zone selective interlocking (ZSI) is standard with upstream MICROLOGIC® trip system circuit breakers. The GFM can also be zone interlocked with the GC-100 ground fault system by using a restraint interface module (Catalogue Number RIM32).

### Ground fault indication

A pop-out indicator on the face of the GFM indicates the module has sensed a ground fault and initiated a tripping signal to the companion circuit breaker.

### Neutral current transformer

A neutral current transformer (CT) is supplied with each GFM for 3-phase 4-wire applications or 1-phase 3-wire applications

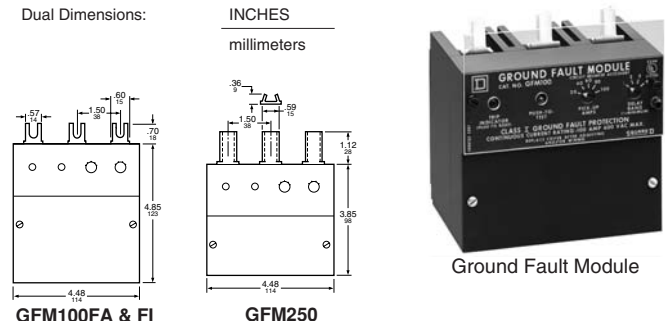
### Ground Fault Module Selection Data

Companion Circuit Breaker Prefix	Catalogue Number ▲	Enclosure Space Required		Ground Fault Pickup Adjustment Range Amperes	Price
		Panel-board	Switchboard/Enclosure		
FAL, FHL, FCL FA, FH, FC	GFM100FA	LA	KA	20-100	
FIL* FI	GFM100FI	LA	LA	20-100	
KAL, KHL, KCL* KIL* KA, KH, KC, KI	GFM250	LA	LA	40-200	

▲ Moulded case circuit breakers using the GFM require a ground fault shunt trip (add suffix G to the circuit breaker catalogue number when ordering).

\* FIL, KCL & KIL available in MCCB enclosures as factory installed only.

Dual Dimensions:



Depth: Unit Mount - 3.22/82; i-Line Mount - 4.85/123

# Moulded Case Circuit Breaker

## Ground-fault Protection Equipment

### 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.



GC-200 Ground Fault Relays work in conjunction with Square D and Federal Pioneer circuit breakers, with shunt trip coils, for use in service entrance switchboards, feeder protection and general equipment protection applications. GC-200 relays functionally replace existing Square D GC-100 relays and Federal Pioneer MGFR relays. GC-200 relays can also be used in other retrofit applications. The GC200 relay is supported also by Federal Pioneer toroidal, and rectangular sensors (contact Schneider Electric), in addition to the Square D rectangular sensors noted below.

#### GC-200 Relays Features

- Five models with sensitivities suitable for main, feeder or branch circuits
- Adjustable Pickup and Time Delay settings
- I2t -- Inverse Time Characteristics
- ZSI -- Zone Selective Interlocking
- ZSI Push-to-Test with Signal Indication
- Two sets of Contacts (1 Form A ;10A@ 120Vac. and 1 Form C; 5A@ 120Vac.N/O, 1 N/C)
- Auxiliary Trip Input Terminals
- External Battery Backup Connection
- Small non-metallic enclosure mounts on DIN rail
- Accepts sensors from both Square D and Federal Pioneer relays

#### GC DSP Display (Optional) Features

- LCD Back Lit Display
- Surface (Panel) Mounted
- Local Display of System Parameters
- "Fine tuning" Adjustment of Ground Fault Relay Settings
- Remote Testing of Ground Fault Relay
- Remote Resetting of Ground Fault Relay
- User selectable French or English text.
- Multiple Length Display Cables ( Optional )

#### 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.

Catalogue Number	Pickup Settings									
GC-200A	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27	0.30
GC-200B	0.30	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.0
GC-200C	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0
GC-200D	30A	90A	90A	120A	150A	180A	210A	240A	270A	300A
GC-200E	120A	240A	360A	480A	600A	720A	840A	960A	1080A	1200A

Catalogue Number	Time Delay Settings ( Sec )				
All Types	Inst.	0.10	0.20	0.30	0.40

Catalogue Number	Description	Price
GC-200A	0.03 - 0.3A Relay	
GC-200B	0.30 - 0.3A Relay	
GC-200C	3.0 - 30A Relay	
GC-200D	30A - 300A Relay	
GC-200E	120A - 1200A Relay	
GC DSP**	GC-200 Display	
GC4	4' GC-200 to GC DSP Cable	
GC12	12' GC-200 to GC DSP Cable	
GC30	30' GC-200 to GC DSP Cable	

\*\* Note: GC12 12' cable shipped standard with GC DSP display units.



T3B Toroid Sensor



GT912 Rectangular Sensor

Relay Catalogue Number	Sensor Catalogue Number	Type	CT Ratio	Window Dimensions		Price
				IN	mm	
GC200A	T2B	Toroid	700:1	1.875 dia.	48 dia.	
	T3B			2.75 dia.	70 dia.	
	T5B			4.625 dia.	117 dia.	
GC200B GC200C GC200D	T2A	Toroid	1000:1	1.875 dia.	48 dia.	
	T3A			2.75 dia.	70 dia.	
	T3AS	Toroid, split-core		2.625 dia.	67 dia.	
	T6A	Toroid		5.75 dia.	146 dia.	
	T6AS T9A	Toroid, split-core Toroid		5.75 dia. 8.75 dia.	146 dia. 222 dia.	
R713A R417A R826A		Rectangular		7.5 x 13.5	191 x 343	
				4.25 x 17.625	108 x 448	
				8 x 26.5	203 x 674	
All "A" type sensors above, plus:						
GC200E	RZ511	Rectangular, Open Frame	1000:1	4.5 x 11	114 x 280	
	RZ521		1000:1	4.5 x 21	114 x 534	
	RZ531		1000:1	4.5 x 31	114 x 788	
	RZ535		1000:1	4.5 x 35	114 x 890	
	RZ1011	Rectangular, Open Frame	1000:1	10.5 x 11	267 x 280	
	RZ1021		1000:1	10.5 x 21	267 x 514	
	RZ1031		1000:1	10.5 x 31	114 x 788	
	GT912	Rectangular, Open Frame	600:1	5.5 x 8.5	140 x 216	
	GT918		600:1	5.5 x 14.5	140 x 368	
	GT930		600:1	5.5 x 26.5	140 x 673	
	GT1218	Rectangular, Open Frame	600:1	8.5 x 14.5	216 x 368	
	GT1224		600:1	8.5 x 20.5	216 x 521	
	GT1230		600:1	8.5 x 26.5	292 x 673	
	GT1327	Rectangular, Open Frame	600:1	9.5 x 24	241 x 610	
	GT1330		600:1	9.5 x 27	241 x 686	
GT1530	Rectangular, Open Frame	600:1	11.5 x 26.5	292 x 673		

Catalog Number	Description	Window Size (in)	Window Size (mm)	Price
GT 912	Ground Fault Sensor*	5 x 8	127 X 203	
GT 918	Ground Fault Sensor*	5 x 14	127 x 356	
GT 930	Ground Fault Sensor*	5 x 26	127 x 660	
GT 1218	Ground Fault Sensor*	8 x 14	203 x 356	
GT 1224	Ground Fault Sensor*	8 x 20	203 x 508	
GT 1230	Ground Fault Sensor*	8 x 26	203 x 660	
GT 1530	Ground Fault Sensor*	11 x 26	280 x 660	
GT 1327	Ground Fault Sensor*	9 x 235	228 x 596	
GT 1330	Ground Fault Sensor*	9 x 265	228 x 673	

\* Rectangular sensors 600:1 for GC-200E only. See Federal Pioneer Sensors (1000:1) for other versions (See Redi-Reference).



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.

### Vigirex Ground-Fault Relays (UL 1053 Listed)

Model	Delay	Reset	Control Voltage	Sensitivity	Catalogue No.	Price
<b>DIN Rail Mounted</b>						
RH10M	Instantaneous	Manual	12–24 Vac/12–48 Vdc	30 mA 100 mA 300 mA 500 mA 1 A	56300 56302 56305 56306 56307	
			110–130 Vac	30 mA 100 mA 300 mA 500 mA 1 A	56320 56322 56325 56326 56327	
			220–240 Vac	30 mA 100 mA 300 mA 500 mA 1 A	56330 56332 56335 56336 56337	
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	
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	
		Automatic	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac		56390TD 56392TD 56393TD	
<b>Panel Mounted</b>						
RH10P	Instantaneous	Manual	12–24 Vac/12–48 Vdc	30 mA 100 mA 300 mA 500 mA 1 Amp	56400 56402 56405 56406 56407	
			110–130 Vac	30 mA 100 mA 300 mA 500 mA 1 Amp	56420 56422 56425 56426 56427	
			220–240 Vac	30 mA 100 mA 300 mA 500 mA 1 A	56430 56432 56435 56436 56437	
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	
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	
		Automatic	12–24 Vac/12–48 Vdc 110–130 Vac 220–240 Vac		56490TD 56492TD 56493TD	

### Sensors for Vigirex Ground-Fault Relays

Sensors	Type	Inside Diameter		Catalogue No.	Price
		IN	mm		
Closed Toroids, type A	TA30	1.18	30	50437	
	PA50	1.97	50	50438	
	IA80	3.15	80	50439	
	MA120	4.72	120	50440	
	SA200	7.87	200	50441	
	GA300	11.81	300	50442	
Split toroids, type OA	POA▲	1.81	46	50485	
	GOA▲	4.33	110	50486	
Rectangular sensors		280 x 115	280 x 115	56053	
		470 x 160	470 x 160	56054	

▲ POA and GOA are not UL recognized

# Moulded Case Circuit Breaker Operating Mechanisms


## Door Mounted Class 9421

### Type L Circuit Breaker Operating Mechanism

The Type L door mounted, variable depth operating mechanisms listed below are complete kits featuring heavy duty, all metal construction with trip indication. All of the operating mechanisms can be padlocked in the "OFF" position when the enclosure door is open. The handle assemblies can be locked "OFF" with up to three padlocks which also locks the door closed. The 3" handle accepts one padlock. A door drilling template is supplied with each kit to ease installation.

The complete kits are rated for installation into type 1, 3R and 12 enclosures. They include a handle assembly, operating mechanism and shaft assembly. Complete installation instructions are included with each kit. Circuit breakers are not included and must be ordered separately.

### Complete Kits

			Includes: Operating Mechanism Standard 6" Handle Standard Shaft Kit				Includes: Operating Mechanism Standard 6" Handle Long Shaft Kit				Includes: Operating Mechanism Short 3" Handle Long Shaft Kit			
Use With														
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (Amps)	Type	Price	Mounting Depth ▲ Min.-Max.	Type	Price	Mounting Depth ▲ Min.-Max.	Type	Price	Mounting Depth ▲ Min.-Max.			
FAL, FCL, FHL	2-3	100	LN1		5 1/2-10 7/16	LN4		5 1/2-21	LN3		5 1/2-21			
KAL, KCL, KHL	2-3	250	LP1		6 1/4-11 3/16	LP4		6 1/4-21 3/4	LP3		6 1/4-21 3/4			
NSF, PowerPact H and J	2-3	250	LJ1		5 1/2-10 3/4	LJ4		5 1/2-21 3/8	-		-			
LAL◆, LHL◆, Q4L	2-3	400	LR1		6 5/16-10 7/8	LR4		6 5/16-21 1/2	3" handles are not recommended for use with these circuit breakers					
PowerPact M and P ▼	3	1200	LW1 *		7 3/16-11 5/8	LW4 *		7 3/16-22 1/4						



▲ Mounting depth measured from circuit breaker mounting surface (control panel) to outside of enclosure door in inches.

◆ **Warning:** These operating mechanisms cannot be used with any LA/LH circuit breaker with an MB or MT suffix.

\* Type LW1 and LW4 include an 8 in. handle (9421LHP8) rather than a 6 in. handle.

▼ These breakers must use the 9421LHP\*\* or LCP\*\* handles only.

### Type 3 and 4 Handle Assemblies\*

										
Use With										
Circuit Breaker or Interrupter Type	No. of Poles	Frame Size (Amps)	NEMA Type 3, 4 (Painted)		NEMA Type 3, 4, 4X (Chrome Plated)		NEMA Type 3, 4 (Painted)		NEMA Type 3, 4, 4X (Chrome Plated)	
			Type	Price	Type	Price	Type	Price	Type	Price
FAL, FCL, FHL	2-3	100	LH46		LC46		LH43		LC43	
KCL, KAL, KHL	2-3	250	LH46		LC46		LH43		LC43	
NSF, PowerPact H and J	2-3	250	LH46		LC46		LH43		LC43	
LAL, LHL, Q4L	2-3	400	LH46		LC46		3" handles are not recommended for use with these circuit breakers			
PowerPact M and P	3	1200	LHP48		LCP48					

\* Due to gasketing, type 3 and 4 handle assemblies are NOT trip indicating.

### Electrical Interlock Kits - Class 9999

Optional accessory for use with operating mechanisms listed on this page.

Description	Class	Type	Price
Single Pole Double Throw	9999	R47	
Double Pole Double Throw	9999	R48	

### How to Order

<b>TO ORDER SPECIFY:</b>		CATALOGUE NUMBER
• CLASS NUMBER	Class	Type
• TYPE NUMBER	9421	LP4



# Moulded Case Circuit Breakers Operating Mechanisms

## Flange Mounted, Variable Depth, Cable Mechanisms Class 9422

DE3 CIRCUIT BREAKERS

DE3

### Circuit Breaker Bracket Mounted Operating Mechanisms



Circuit Breaker operating mechanisms listed below are shipped with the external operating handle assembled to a bracket. Circuit breakers are not included and must be ordered separately. A trim plate is provided with each kit to eliminate any mounting screws from being accessible from the front and also to provide an attractive installation. The operating handle is Type A1. These switches can be used with Class 9423 door closing mechanisms.

Use With			Operating Mechanism	
Breaker or Interrupter Type	No. of Poles	Frame Size (A)	Right Hand Flange Mounting	
			Catalogue No.	Price
FAL, FHL	2-3	100	BN1	
KAL, KHL	2-3	250	BP1	
LAL, LHL, Q4L	2-3	400	BR1	

■ **Warning:** These operating mechanisms cannot be used with any LA/LH circuit breaker with an MB or MT suffix.

Note: Some enclosures may not accept the listed bracket mounted operating mechanisms; contact the enclosure manufacturer.

### Electrical Interlock Kits—Class 9999

Optional accessory for use with circuit breaker operating mechanisms listed to the left and the flexible cable mechanisms listed below.

Description	Class	Type	Price
Single Pole, Double Throw	9999	R26	
Double Pole, Double Throw	9999	R27	

### Flange Mounted, Variable Depth

Designed for installation in custom built control enclosures where main or branch circuit protective devices are required. All circuit breaker operating mechanisms are suitable for either right- or left-hand flange mounting, convertible on the job.



Use With				Operating Mechanism					
Circuit Breaker Frame Size	No. of Poles	Frame Size (Amps)	Variable Depth Mtg. Range Min.-Max. (Inches) ↕	Operating Mechanism Only —Does Not Include Handle Mechanism		Operating Mechanism and Handle Mechanism			
				Type	Price	Includes Type A1 Handle Mechanism †		Includes Type A2 Handle Mechanism *	
						Type	Price	Type	Price
FAL, FHL	2-3	100	5.38-17.75	RN1		ARN11		ARN21	
KAL, KHL	2-3	250	6.38-17.88	RP1		ARP11		ARP21	
LAL, LHL, Q4L	2-3	400	7.44-18.25	RR1		ARR11		ARR21	
Powerpact H- and J-frame	2-3	250	5.88-17.75	RQ1		—		—	
Powerpact M- and P- Frame	3	1200	9.00-18.38	RM1		—		—	

↕ Class 9422R2 Rod (Book CP2) will extend mounting depth 7".

† Handle mechanism A1 suitable for use on type 1, 3, 3R, 4 (sheet steel) & 12 enclosures.

\* Handle mechanism A2 suitable for use on type 4 (stainless Steel) enclosures.

### Circuit Breaker Flexible Cable Mechanisms

For use with Square D circuit breakers and Class 9422 A handle operators. Especially designed for tall, deep enclosures where placement flexibility is required.



Circuit Breaker Type	No. of Poles	Frame Size (A)	Cable Mechanism			Cable Mechanisms with A1 Handle For Types 1, 3, 3R, 4, 12	
			Cable Length	Catalogue No.	Price	Catalogue No.	Price
FAL, FHL	2-3	100	36"	CFA30		CFA31	
			60"	CFA50		CFA51	
			120"	CFA10		CFA11	
KAL, KHL	2-3	250	36"	CKA30		CKA31	
			60"	CKA50		CKA51	
			120"	CKA10		CKA11	
LAL, LHL, Q4L	2-3	400	36"	CLA30		CLA31	
			60"	CLA50		CLA51	
			120"	CLA10		CLA11	
Powerpact D	3	600	36"	CSJ30			
			60"	CSJ50			
			120"	CSJ10			
Powerpact H- and J-frame	2 - 3	250	36"	CSF30			
			60"	CSF50			
			84"	CSF70			
			120"	CSF10			
Powerpact M- and P- Frame	3	1200	36"	CMP30			
			60"	CMP50			
			84"	CMP10			

▼ **Warning:** These operating mechanisms cannot be used with any LA/LH circuit breaker with an MB or MT suffix.

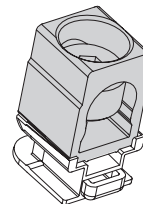
# Moulded Case Circuit Breaker

## Terminals

Used with HD, HG, HJ, HL, JD, JG, JJ, JL, DG, DJ, DL Circuit Breakers

### Mechanical Lug Kits

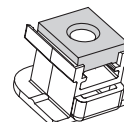
Circuit Breaker Application				Number of Wires	Kit	Qty	Price Per Kit
Standard	Ampere Rating	Optional	Ampere Rating	Per Lug and Wire Range	Catalogue Number	Per Kit	
<b>Al Lugs for Use with Al or Cu Wire</b>							
HD, HG, HJ, HL	15-150 A			1-#14-3/0 AWG Al or Cu	AL150HD	3	
JD, JG, JJ, JL	150-175 A			1-#1/0-4/0 AWG Al or Cu	AL175JD	3	
JD, JG, JJ, JL	200-250 A	JD,JG,JJ,JL	150-175 A	1-#3/0-350 kcmil Al or Cu	AL250JD	3	
<b>Cu Lugs for Use with Cu Wire Only</b>							
		HD,HG,HJ,HL	15-150 A	1-#14-2/0 AWG Cu	CU150HD	3	
		JD,JG,JJ,JL	150-250 A	1-#1/0-300 kcmil Cu	CU250JD	3	
Control Wire Terminal for H-frame lug kit					S37423	2	
Control Wire Terminal for J-frame lug kit					S37424	2	



J-frame Lug

### Terminal Accessories

Description	Frame	Tap	Catalogue Number	Qty Per Kit	Price Per Kit
H-frame Terminal Nut Insert-English	HD/HG/HJ/HL	1/4-20	S37425	2	
H-frame Terminal Nut Insert-English	HD/HG/HJ/HL	1/4-20	S37444	3	
H-frame Terminal Nut Insert-Metric	HD/HG/HJ/HL	M6	S37426	2	
J-frame Terminal Nut Insert-English	JD/JG/JJ/JL	5/16	S37427	2	
J-frame Terminal Nut Insert-English	JD/JG/JJ/JL	5/16	S37445	3	
J-frame Terminal Nut Insert-Metric	JD/JG/JJ/JL	M8	S37428	2	
Control Wire Terminal for H-frame Terminal Nut	HD/HG/HJ/HL		S37429	2	
Control Wire Terminal for J-frame Terminal Nut	JD/JG/JJ/JL		S37430	2	



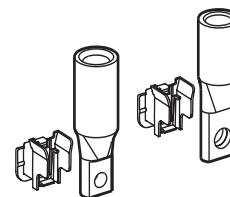
H-frame Terminal Nut

### Aluminum Compression Lug Kits

Circuit Breaker Type	System Range	Dimension A (in)	Max. Lugs per Terminal	Catalogue Number	Qty. Per Kit	Price Per Kit
H-frame	#6-#2 AWG Al or Cu	1.2	1	YA060HD	3	
	#1-#4/0 AWG Al or Cu	2.5	1	YA150HD	3	
J-frame	#1/0-#3/0 AWG Al or Cu	1.2	1	YA150JD	3	
	#3/0-350 kcmil Al or Cu	2.5	1	YA250J35	3	

### Copper Compression Lug Kits

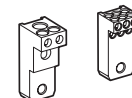
Circuit Breaker Type	System Range	Dimension A (in)	Max. Lugs per Terminal	Catalogue Number	Qty. Per Kit	Price Per Kit
H-frame	#6-#1/0 AWG Cu	1.0	1	CYA060HD	3	
	#4-#2/0 AWG Cu	1.2	1	CYA150HD	3	
J-frame	#6-#1/0 AWG Cu	0.7	1	CYA150JD	3	
	#2/0-300 kcmil Cu	1.1	1	CYA250J3	3	



Compression Lug Kit

### Power Distribution Connectors for H-frame, J-frame and D-frame Circuit Breakers

Use with Circuit Breaker Type	Circuit Breaker Ampere Rating	Wires Per Terminal & Wire Range	Dimension A (in.)	Catalogue Number	Quantity Per Kit	Price Per Kit
HD, HG, HJ, HL★	15-150	(6) 14-6 AWG Cu	1.0	PDC6HD6	3	
	15-150	(3) 14-2 AWG Cu	1.2	PDC3HD2	3	
JD, JG, JJ, JL★	150-250	(6) 14-4 AWG Cu	1.0	PDC6JD4	3	
	150-250	(2) 14-1 AWG Cu	1.5	PDC3JD20	3	
DG, DJ, DL	150-600	(3) 14-2 AWG (2) 14-2/0 AWG	1.65Δ	PDC5DG20	3	
	15-150	(12) 14-4 AWG	1.65Δ	PDC12DG4	3	



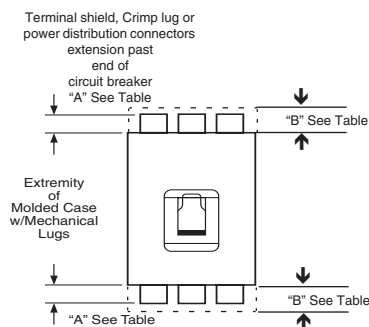
Power Distribution Connectors

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

### Terminal Shields and Phase Barriers

Used With	Description			Dimension B (in.)	Catalogue Number	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		
		H-Frame 150 A	3/0 AWG	0.50	S37447	1		
		J-Frame	350 kcmil	0.24	S37448	1		
H- and J-Frame Power Distribution Connectors and Compression Lugs	H-Frame Long Lug Shield	Compatible with:		2.24	S37449■	1		
		PDC	Compression Lugs					
		Aluminum	Copper					
		PDC6HD6	YA060HD					CYA060HD
		PDC3HD2	YA150HD					CYA150HD
J-Frame Long Lug Shield	PDC6JD4	YA150JD	CYA150JD	1.68	S37450■	1		
	PDC3JD2	◆	CYA250J3					
D-Frame	Terminal Shield (3P)	PDC5DG2	—	—	36965	1		

- ▲ Short lug shields provide IP20 protection for mechanical lugs and are compatible with control wire terminals.
- ◆ Contact a Field Office for availability information.
- J-frame terminal shield is not compatible with the YA250J35 compression terminal.



### Mechanical Lug Kit Information

Standard	Circuit Breaker Application			Number of Wires Per Lug and Wire Range	Kit Catalog Number	Lugs Per Kit	Price Per Kit
	Ampere Rating	Optional	Ampere Rating				

#### Al Lugs for Use with Al or Cu Wire

EDB, EGB, EJB	15-30	...	...	(1) #12-#6 AWG Al or (1) #14-#6 AWG Cu	AL30FD	3	
EDB, EGB, EJB	35-125	EDB, EGB, EJB	15-30	(1) #12-#2/0 AWG Al or (1) #14-#2/0 AWG Cu	AL100FD	3	
FA, FH FI	15-30	FA, FH FI	35-100	(1) #14-#4 AWG Cu or (1) #12-#4 AWG Al	AL50FA	3	
FC	35-100	FC	15-30	(1) #14-#3 AWG Cu or (1) #12-#1 AWG Al	AL100FA4	3	
FA, FH FI	35-100	FA, FH FI	15-30	(1) #14-#1/0 AWG Cu or (1) #12-#1/0 AWG Al	AL100FA	3	
...	...	FA, FH, FC	15-100	(1) #12-#3 AWG Cu	AL100TF	3	
...	...	FA	150 (only)	(1) #2-#3/0 AWG	AL150FA	3	
KA, KH	70-250	...	...	(1) #4 AWG-350 kcmil	AL250KA	3	
KI, KC	110-175	...	...				
KD, KG	100-250	...	...	(1) #6 AWG-350 kcmil	AL250KD	3	
KI, KC	200-250	KI	110-175	(1) #1/0 AWG-350 kcmil	AL250KI	3	
Q4, LA, LH	125-400	...	...	(1) #1 AWG-600 kcmil or (2) #1 AWG-250 kcmil	AL400LA	1	
...	...	Q4, LA, LH	125-400	(1) 350-750 kcmil	AL400LH7	1	
DG, DJ, DL	400	...	...	(1) #2 AWG-600 kcmil Cu or (1) #2 AWG-500 kcmil Al	32508	3	
DG, DJ, DL	600	...	...	(2) #2/0 AWG-350 kcmil Cu or (2) #2/0 AWG-500 kcmil Al	32510	3	
LE, LX, LXI	100-250	LC, LI, LE, LX, LXI	...	(2) #1 AWG-350 kcmil	AL600LI35	1	
LC, LI, LE, LX, LXI	300-600	LE, LX, LXI	100-250	(2) #4/0 AWG-500 kcmil	AL600LI5	1	
...	...	LC, LI, LE, LX, LXI	...	(1) 500-750 kcmil	AL600LI7	1	
M-, P-frame	800	...	...	(3) #3/0 AWG-500 kcmil	AL800M23K	3, 4	
	1200	PG, PJ, PL, MG, MJ	800	(4) #3/0 AWG-500 kcmil	AL1200P24K	1	
	1200	PG, PJ, PL	800	(4) #3/0 AWG-500 kcmil	AL1200P25K	3, 4	
	...	PG, PJ, PL	800-1200	(3) #3/0 AWG-600 kcmil	AL1200P6KU	3, 4	
	1200	PG, PJ, PL Unit Mount	800-1200	(3) #3/0 AWG-600 kcmil or (3) 750 kcmil NUAL	AL1200P7KU	3, 4	
	...	PG, PJ, PL, MG, MJ	800	(2) #3/0 AWG-600 kcmil	AL800P6K	3, 4	
R-frame	1200	I-Line®	...	(4) #3/0 AWG-600 kcmil	AL1200R53K	1	
	2500	Unit Mount	...	(1) #1/0 AWG-750 kcmil	AL2500RK	2	

#### Cu Lugs for Use with Cu Wire Only

...	...	EDB, EGB, EJB	15-125	(1) #14-#1/0 AWG Cu	CU100FD	3	
FC	15-30	...	...	(1) #14-#10 AWG Cu	CU30FA4	3	
...	...	FA, FH, FC, FI	15-100	(1) #14-#1 AWG Cu	CU100FA	3	
...	...	FA, FH, FC	15-100	(1) #12-#3 AWG Cu	CU100TF	3	
...	...	KA, KH	70-250	(1) #4 AWG-250 kcmil Cu	CU250KA	3	
...	...	KC, KI	110-250				
KD, KG	100-250	...	...	(1) #6 AWG-350 kcmil	CU250KD	3	
...	...	Q4, LA, LH	125-400	(1) #1 AWG-600 kcmil Cu or (2) #1 AWG-250 kcmil Cu	CU400LA	1	
...	...	LC, LI, LE, LX, LXI	...	(2) #1 AWG-350 kcmil	CU600LI35	1	
...	...	LC, LI, LE, LX, LXI	...	(2) #4/0 AWG-500 kcmil	CU600LI5	1	
...	...	LC, LI, LE, LX, LXI	...	(1) 500-750 kcmil	CU600LI7	1	
M-, P-frame	800	...	...	(3) #3/0 AWG-500 kcmil	CU800M23K	3, 4	
	1200	PG, PJ, PL	800	(4) #3/0 AWG-500 kcmil	CU1200P24K	1	
	1200	PG, PJ, PL	800	(4) #3/0 AWG-500 kcmil	CU1200P25K	3, 4	
R-frame	1200	I-Line	...	(4) #3/0 AWG-600 kcmil	CU1200R53K	1	

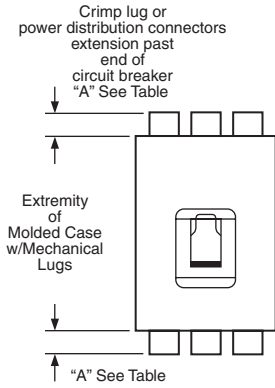


AL2500PA

# Moulded Case Circuit Breakers

## Crimp Lugs, Power Distribution Connectors

### Compression Lugs



CVC100FA VC250KA3 CVC400LA5 VC400LA7



VC1200NE5

CVC600MA5



PDC6FA6



PDC6KA4



PDC12LA4

### Power Distribution Connectors for Circuit Breakers—for Field Replacement of Mechanical Lugs

Can be used for multiple load connections on one circuit breaker. Use in place of standard distribution blocks to save space and time.

Field-installable kits, including tin-plated aluminum connectors and all necessary mounting hardware are available for Square D FA, KA, LA, Q4, MA and P-frame molded case circuit breakers.

- For use on load end of circuit breaker only
- For use in UL508 Industrial Control applications only
- For use in UL 1995/CSA C22.2 No. 236 heating and cooling equipment
- For copper wire only

### Field-installable Lug Kits

Circuit Breaker Type	System Range▲	Dimension A (In)	Max. Lugs Per Terminal	Kit Catalogue Number	Lug Qty. Per Kit	Price Per Kit
<b>Aluminum Compression Lug Kits</b>						
EDB, EGB, EJB	#8-#1/0 AWG	1.375	1	VC100FD	3	
FA, FH, FC, FI	#8-#1/0 AWG	1.3	1	VC100FA	3	
KA, KH, KC, KI	#4 AWG-300 kcmil	1.5	1	VC250KA3	3	
KA, KH, KC, KI	250-350 kcmil	1.5	1	VC250KA35	3	
LA, LH, Q4	250-350 kcmil	1.25	2	VC400LA35	2	
LA, LH, Q4	#4 AWG-300 kcmil	1.0	2	VC400LA3	2	
LA, LH, Q4	#2/0 AWG-500 kcmil	2.2	1	VC400LA5	1	
LA, LH, Q4	500-750 kcmil	2.5	1	VC400LA7	1	
LC, LI, LE, LX, LXI♦	#4 AWG-300 kcmil	1.05	2	VC600LI3	2	
LC, LI, LE, LX, LXI♦	#2/0 AWG-500 kcmil	3.20	2	VC600LI5	2	
LC, LI, LE, LX, LXI♦	500-750 kcmil	3.45	1	VC600LI7	1	
M-, P-frame	2/0-300 kcmil	3.7	2	YA250P3	1	
	4/0-500 kcmil	3.9	2	YA300P5	1	
	2/0-300 kcmil	4.3	2	YA400P3	2	
	500-750 kcmil	3.7	2	YA400P7	1	
	4/0-500 kcmil	3.9	2	YA600P5	2	
R-frame■	500-750 kcmil	4.3	2	YA800P7	2	
	2/0-300 kcmil	3.8	4	YA1200R3	4	
	4/0-500 kcmil	4.0	4	YA1200R5	4	
	500-750 kcmil	4.4	4	YA1200R7	4	
	2/0-300 kcmil	■	8	YA2000R3	2	
4/0-500 kcmil	■	8	YA2000R5	2		
500-750 kcmil	■	8	YA2500R7	2		

### Copper Compression Lug Kits

EDB, EGB, EJB	#6-#1/0 AWG	1.375	1	CVC100FD	3	
FA, FH, FC, FI	#6-#1/0 AWG Cu	1.4	1	CVC100FA	3	
KA, KH, KC, KI	#2/0 AWG-300 kcmil Cu	1.5	1	CVC250KA3	3	
LA, LH, Q4	#2/0 AWG-300 kcmil Cu	1.3	2	CVC400LA3	2	
LA, LH, Q4	250-500 kcmil Cu	2.3	1	CVC400LA5	1	
LC, LI, LE, LX, LXI■	250-500 kcmil	3.20	2	CVC600LI5	2	
M-, P-frame	4/0-500 kcmil	3.3	2	CYA400P5	1	
	4/0-500 kcmil	3.3	2	CYA600P5	2	
	500-750 kcmil	3.6	2	CYA800P7	2	
R-frame	4/0-500 kcmil	3.5	4	CYA1200R5	4	
	500-750 kcmil	3.8	4	CYA1200R7	4	

▲ Unless otherwise specified, wire sizes apply to both aluminum and copper conductors.

■ All P- and R-frame circuit breakers require terminal pads for mounting lugs of any type.

♦ These lug kits cannot be used on I-Line® circuit breakers.

Use With Circuit Breaker★	Circuit Breaker Ampere Rating	Number of Wires Per Terminal & Wire Range† AWG/kcmil Cu	Catalogue Number	Lug Quantity Per Kit	Dimension A (In.)	Price Per Kit
FAL, FHL, FCLΔ	15-100	(6) #14-#6	PDC6FA6	3	1.0	
	15-100	(3) #14-#2	PDC3FA2	3	1.2	
KAL, KHL	70-250	(6) #14-#4	PDC6KA4	3	1.0	
	70-250	(2) #14-#1 (1) #12-#2/0	PDC3KA20	3	1.5	
LAL, LHL, Q4L	125-400	(6) #12-#2/0 (12) #14-#4	PDC6LA20 PDC12LA4	1 1	2.25 1.25	
	125-400	(3) #14-#2 (1) #2-250	PDC4LA250	1	2.0	
M-, P-frame	250-1200	(6) #3-2/0 (6) #6-#4	PDC6P20	3	0.0	
		(6) #8 (6) #12-#10	PDC6P204	4	0.0	
	250-1200	(12) #6-#4 (12) #8 (12) #10	PDC12P4	3	0.0	
			PDC12P44	4	0.0	

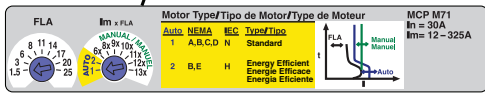
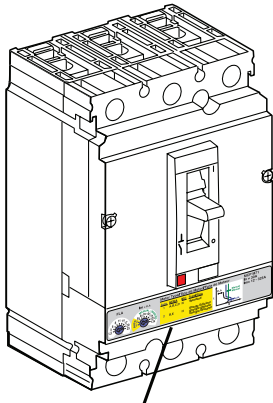
★ Not for use with I-Line circuit breakers.

▼ When using fine stranded wire, increased cross sectional area may cause maximum wire size to be reduced.

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

# Moulded Case Circuit Breakers PowerPact® H- and J-frame Electronic Motor Circuit Protectors

Magnetic Trip



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.

## H- and J-frame Electronic Motor Circuit Protectors (MCP)

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

## 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."

## 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.

## Short Circuit Current Ratings (SCCR)

Contactor/Starter	J Interrupting			L Interrupting		
	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

DE3 CIRCUIT BREAKERS

DE3

# Moulded Case Circuit Breakers

## PowerPact® H- and J-frame Electronic Motor Circuit Protectors

### Magnetic Trip Selection Table

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		
00	1/2	1/2	1/2	1/2	0.9 A	HJL36030M71 and HLL36030M71 1/2-10 hp
			3/4	3/4	1.1 A	
			1	1	1.3 A	
			1	1	1.7 A	
			1-1/2	1-1/2	2.1 A	
			1-1/2	1-1/2	2.2 A	
			1-1/2	1-1/2	2.4 A	
			1-1/2	1-1/2	2.5 A	
			1-1/2	1-1/2	2.7 A	
			1-1/2	1-1/2	3 A	
			1-1/2	1-1/2	3.2 A	
			1-1/2	1-1/2	3.4 A	
0	3/4	3/4	2	3	3.7 A	HJL36050M72 and HLL36050M72 10-25 hp
			3	3	3.9 A	
			3	3	4.2 A	
			3	3	4.8 A	
			3	3	4.8 A	
			3	3	6 A	
			3	3	6.1 A	
			3	3	6.8 A	
			3	3	6.9 A	
			3	3	7.6 A	
			3	3	7.8 A	
			3	3	9 A	
1	1	1	5	5	9.6 A	HJL36100M73 and HLL36100M73 15-50 hp
			5	5	11 A	
			5	5	14 A	
			5	5	15.2 A	
			5	5	17 A	
			5	5	17.5 A	
			5	5	21 A	
			5	5	22 A	
			5	5	25.3 A	
			5	5	27 A	
			5	5	28 A	
			5	5	32 A	
2	1-1/2	1-1/2	7-1/2	7-1/2	32.2 A	HJL36150M74 and HLL36150M74 30-100 hp
			10	10	34 A	
			10	10	40 A	
			10	10	41 A	
			10	10	42 A	
			10	10	48.3 A	
			10	10	52 A	
			10	10	54 A	
			10	10	62 A	
			10	10	65 A	
			10	10	68 A	
			10	10	77 A	
10	10	78.2 A				
3	2	2	10	10	80 A	JL36250M75 and JLL36250M75 50-150 hp
			15	15	92 A	
			15	15	96 A	
			15	15	99 A	
			15	15	104 A	
			15	15	120 A	
			15	15	124 A	
			15	15	125 A	
			15	15	130 A	
			15	15	144 A	
			15	15	150 A	
			15	15	154 A	
15	15	156 A				
4	2-1/2	2-1/2	15	15	177.1 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			20	20	180 A	
			20	20	192 A	
			20	20	192 A	
			20	20	221 A	
			20	20	240 A	
			20	20	248 A	
			20	20	248 A	
			20	20	248 A	
			20	20	248 A	
			20	20	248 A	
			20	20	248 A	
5	3	3	20	20	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
			25	25	248 A	
5	3-1/2	3-1/2	25	25	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
			30	30	248 A	
5	4	4	30	30	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
			40	40	248 A	
5	4-1/2	4-1/2	40	40	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
			50	50	248 A	
5	5	5	50	50	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
			60	60	248 A	
5	5-1/2	5-1/2	60	60	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
			75	75	248 A	
5	6	6	75	75	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
			100	100	248 A	
5	6-1/2	6-1/2	100	100	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
			125	125	248 A	
5	7	7	125	125	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
			150	150	248 A	
5	8	8	150	150	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
			200	200	248 A	
5	9	9	200	200	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
			240	240	248 A	
5	10	10	240	240	248 A	Shaded area is not covered by J-frame electronic motor circuit protector.
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	
			248	248	248 A	

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

DE3 CIRCUIT BREAKERS

# Moulded Case Circuit Breakers MAG-GARD® Motor Circuit Protectors

600Vac  
3 - 1200 Amps

Magnetic Trip  
Selection Table

## Adjustable Instantaneous Trip Circuit Breakers For Single Motor Circuit Protection



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 C/B's 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 C/B in combination with a contactor and overload relay. Refer to C.E.C. 28-210.

### Select instantaneous trip C/B's as follows:

1. This selection table is suitable for motors with Locked-Rotor Indicating Code Letters as follows;

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

For other motors order a special thermal-magnetic circuit breaker with magnetic trip settings for the specific motor - specify motor horsepower, voltage, frequency, full load current and code letter or locked rotor current.

2. Determine motor HP rating from the motor nameplate.

3. Refer to the table at right and select an instantaneous trip C/B with an ampere rating recommended for the HP and voltage involved.

4. Select an adjustable trip setting of at least 700%, not to exceed 1300%, of the motor full load amperes. (FLA).

5. The 1300% maximum setting may be inadequate for instantaneous trip circuit breakers to withstand current surges typical of the magnetization current of auto-transformer 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 DE3-5 for those applications.

6. Part-winding motors, 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.

7. Motor full load currents, 1/2 HP thru 200 HP are taken from Table 44 of the C.E.C. & Table 430-150 of the NEC. Above 200 HP from UL 98, Table 18.2. Select wire and circuit breakers on basis of horsepower rather than nameplate full load current for General Motor Applications. **Do not use these values to select overload relay thermal units. See Book CP2 for selection of thermal units when actual full load is not known.** The voltages listed are rated motor voltages. Corresponding nominal system voltages are 200 to 208, 220 to 240, 440 to 480 and 550 to 600 volts.

Based on 1990 CEC Section 28-210 & Table 44, and 1990 NEC Article 430-52 and Table 430-150.

HP Ratings of Induction Type Squirrel-Cage and Wound Rotor Motors				Full Load Amps. (Note7)	Standard MAG-GARD® Circuit Breaker Catalogue No.	Magnetic Trip Settings*	
Three Phase 60 Hz ac						LO	HI
200 Volts	230 Volts	460 Volts	575 Volts				
...	...	...	1/2	0.8	FAL36003-11M	1000%	3500%
...	...	1/2	...	1	FAL36003-11M	800%	2800%
...	...	...	3/4	1.1	FAL36003-11M	700%	2500%
...	...	3/4	1	1.4	FAL36003-11M	600%	2000%
...	...	1	...	1.8	FAL36003-11M	400%	1600%
...	1/2	...	...	2	FAL36003-11M	400%	1400%
...	...	...	1 1/2	2.1	FAL36003-11M	400%	1300%
1/2	...	...	...	2.3	FAL36003-11M■	300%	1200%
...	...	1 1/2	...	2.6	FAL36007-12M	700%	2700%
...	...	...	2	2.7	FAL36007-12M	700%	2600%
...	3/4	...	...	2.8	FAL36007-12M	600%	2500%
...	...	2	...	3.2	FAL36007-12M	600%	2200%
...	...	...	...	3.4	FAL36007-12M	500%	2100%
...	1	...	...	3.6	FAL36007-12M	500%	1900%
...	...	...	3	3.9	FAL36007-12M	500%	1800%
1	...	...	...	4.1	FAL36007-12M	400%	1700%
...	...	3	...	4.8	FAL36007-12M	400%	1500%
...	1 1/2	...	...	5.2	FAL36007-12M	300%	1300%
1 1/2	...	...	...	6	FAL36007-12M■	300%	1200%
...	...	...	5	6.1	FAL36007-12M■	300%	1100%
...	2	...	...	6.8	FAL36015-13M	700%	2600%
...	...	5	...	7.6	FAL36015-13M	700%	2400%
2	...	...	...	7.8	FAL36015-13M	600%	2300%
...	...	...	7 1/2	9	FAL36015-13M	600%	2000%
...	3	...	...	9.6	FAL36015-13M	500%	1900%
3	...	7 1/2	10	11	FAL36015-13M	500%	1600%
...	...	10	...	14	FAL36030-15M	700%	2500%
...	5	...	...	15.2	FAL36030-15M	700%	2300%
...	...	...	15	17	FAL36030-15M	600%	2100%
5	...	...	...	17.5	FAL36030-15M	600%	2000%
...	...	15	...	21	FAL36030-15M	500%	1700%
...	7 1/2	...	20	22	FAL36030-15M	700%	2600%
7 1/2	...	...	25.3	25.3	FAL36050-16M	600%	2300%
...	...	20	25	27	FAL36050-16M	600%	2100%
...	10	...	...	28	FAL36050-16M	500%	2100%
...	...	30	...	32	FAL36050-16M	500%	1800%
10	...	...	...	32.2	FAL36050-16M	500%	1800%
...	...	25	...	34	FAL36050-16M	400%	1700%
...	...	30	...	40	FAL36050-16M	400%	1500%
...	...	40	...	41	FAL36100-18M	700%	2700%
...	15	...	...	42	FAL36100-18M	700%	2600%
15	...	...	...	48.3	FAL36100-18M	600%	2300%
...	...	40	50	52	FAL36100-18M	600%	2100%
...	20	...	...	54	FAL36100-18M	600%	2000%
20	...	...	60	62	FAL36100-18M	500%	1800%
...	...	50	...	65	FAL36100-18M	500%	1700%
...	25	...	...	68	FAL36100-18M	400%	1600%
...	...	60	75	77	FAL36150-24M	600%	1400%
25	...	...	...	78.2	FAL36150-24M	600%	1400%
...	30	...	...	80	FAL36150-24M	600%	1400%
30	...	...	...	92	KAL36250-25M	700%	1400%
...	...	75	...	96	KAL36250-25M	700%	1300%
...	...	...	100	99	KAL36250-25M	600%	1300%
...	40	...	...	104	KAL36250-26M	700%	1400%
40	...	...	...	119.6	KAL36250-29M	700%	1500%
...	...	100	...	124	KAL36250-29M	700%	1400%
...	...	...	125	125	KAL36250-29M	700%	1400%
...	50	...	...	130	KAL36250-29M	700%	1300%
...	...	...	150	144	KAL36250-30M	700%	1400%
50	...	...	...	149.4	KAL36250-30M	700%	1300%
...	...	...	...	154	KAL36250-31M	700%	1500%
...	...	125	...	156	KAL36250-31M	700%	1400%
60	...	...	...	177.1	KAL36250-32M	700%	1400%
...	...	150	...	180	KAL36250-32M	700%	1400%
...	75	...	200	192	KAL36250-32M	700%	1300%
75	...	...	...	220.8	LAL36400-33M	700%	1400%
...	...	200	...	240	LAL36400-35M	700%	1500%
...	...	...	250	242	LAL36400-35M	700%	1400%
...	100	...	...	248	LAL36400-35M	700%	1400%
100	...	...	...	285.2	LAL36400-36M	700%	1400%
...	...	...	300	289	LAL36400-36M	700%	1400%
...	...	250	...	302	LAL36400-36M	700%	1300%
...	125	...	...	312	LAL36400-36M	600%	1300%

■ 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.

\* Only LO and HI settings are shown, intermediate settings are available on all circuit breakers.

# Moulded Case Circuit Breakers

## MAG-GARD® Motor Circuit Protectors, Current Limiting Modules

Magnetic Trip

600Vac  
3 - 1200 Amps

### MAG-GUARD® Circuit Breaker

Instantaneous trip magnetic only circuit breakers have a single adjustment which simultaneously sets the magnetic trip level of each individual pole. MAG-GUARD® circuit breakers comply with CEC requirements for providing motor circuit protection when installed as part of a listed combination controller having motor overload protection.

Current interrupting ratings are established for these CSA recognized components in combination with motor starters with properly sized overload relays and contactors.

All MAG-GUARD circuit breakers will accept the same lugs and accessories as equivalent thermal-magnetic circuit breakers.

### Magnetic Only 3-1200 Amperes 600Vac, 50/60Hz

Ampere Rating	Adjustable Trip Range Amperes	3-Pole		Ampere Rating	Adjustable Trip Range Amperes	3-pole				
		Catalogue No.	Price			J-interrupting -600 Vac		L-interrupting -480 Vac		
				Cat. No.	Price	Cat. No.	Price			
FAL	3	8-28	FAL3600311M	PJL, PLL	600	1200-10000	PJL36060M68		PLL34060M68	
	7	18-70	FAL3600712M		800	1200-10000	PJL36080M68		PLL34080M68	
	15	50-180	FAL3601513M		1000	1500-10000	PJL36100M69		PLL34100M69	
	30	50-180	FAL3603013M		1200	1800-10000	PJL36120M70		PLL34120M70	
	30	100-350	FAL3603015M							
	50	75-260	FAL3605014M							
	50	150-580	FAL3605016M							
	100	150-580	FAL3610016M							
	100	300-1100	FAL3610018M							
	KAL	150	750-1500		KAL3615026M					
250	400-800	KAL3625021M								
	500-1000	KAL3625022M								
	625-1250	KAL3625025M								
	750-1500	KAL3625026M								
	875-1750	KAL3625029M								
	1000-2000	KAL3625030M								
	1125-2250	KAL3625031M								
400	1250-2500	KAL3625032M								
	500-1000	LAL3640022M								
	750-1600	LAL3640028M								
	1000-2000	LAL3640030M								
	1125-2250	LAL3640031M								
	1250-2500	LAL3640032M								
	1500-3000	LAL3640033M								
1750-3500	LAL3640035M									
2000-4000	LAL3640036M									

↔ Magnetic trip setting tolerances are ±20% from the nominal values shown.

DE3 CIRCUIT BREAKERS

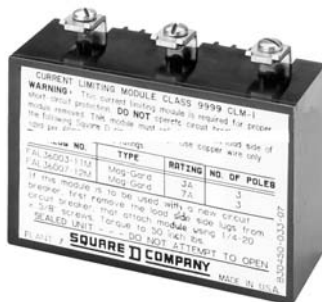
### Current Limiting Module

Classes 8539 and 8739 combination starters Type Sizes 0-3, Type Types 1, 4 and 12 with a factory added Current Limiting Module (CLM) are suitable for use on systems having an available fault current of 100,000 amperes RMS symmetrical.

The CLM is designed for use with FA frame MAG-GUARD® circuit breakers\*. There are three types of modules:

- Class 9999 Type CLM-1 for 3 and 7 amp MAG-GUARD® circuit breakers\*
- Class 9999 Type CLM-2 for 15 and 30 amp MAG-GUARD® circuit breakers\*
- Class 9999 Type CLM-3 for 50 and 100 amp MAG-GUARD® circuit breakers\*

Each type module has a rejection feature. (For example: A CLM-3 cannot be installed in place of a CLM-1 or CLM-2.)



Current Limiting Module

Catalogue Number Class and Type	MAG-GUARD Circuit Breaker Size	Pricing		
		Kit List	Factory Installed	
			Form Number	List Adder
9999 CLM1	3 or 7 amperes		Y1261	
9999 CLM2	15 or 30 amperes		Y1261	
9999 CLM3	50 or 100 amperes		Y1261	

\*Current Limiting Modules can also be used on standard FHL Thermal-Magnetic Circuit Breakers. Select required circuit breaker from page DE3-9. Note: Cannot be used for I-Line panel applications or with standard MCCB enclosures.



# Moulded Case Circuit Breaker Dimensions

Class 600

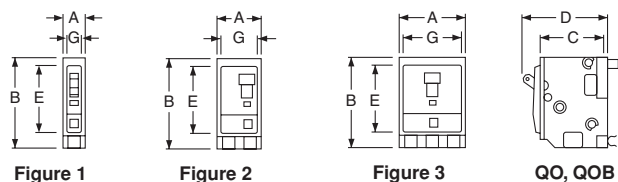


Figure 1

Figure 2

Figure 3

QO, QOB

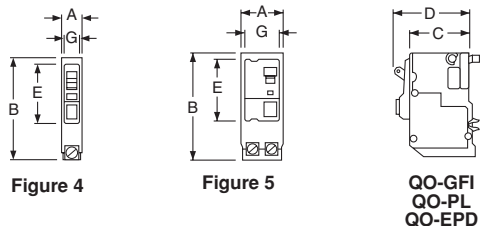


Figure 4

Figure 5

QO-GFI  
QO-PL  
QO-EPD

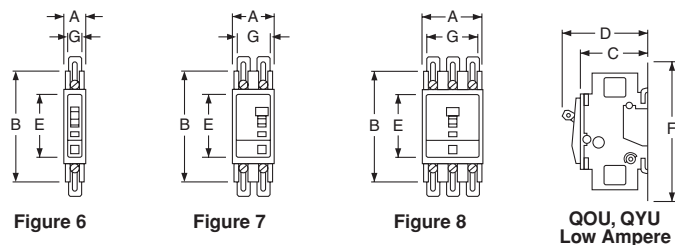


Figure 6

Figure 7

Figure 8

QOU, QYU  
Low Ampere

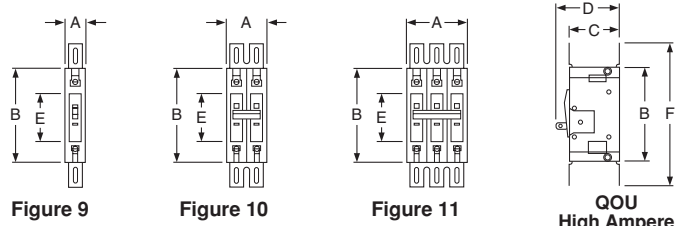


Figure 9

Figure 10

Figure 11

QOU  
High Ampere

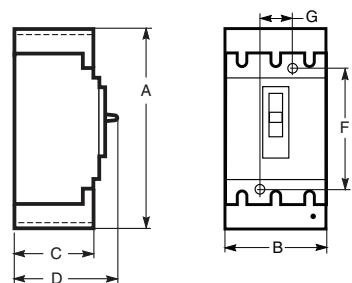


Figure 12

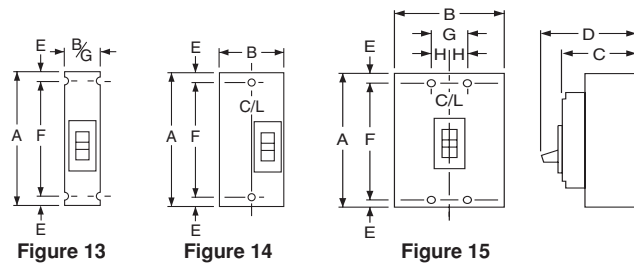


Figure 13

Figure 14

Figure 15

## QO®, QOU, EH Circuit Breakers

Circuit Breaker Catalogue No. Prefix	No. 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	9	0.75	4.45	2.37	2.96	2.25	6.78	...
	2	10	1.50	4.45	2.37	2.96	2.25	6.78	...
	3	11	2.25	4.45	2.37	2.96	2.25	6.78	...

▲ 35-70 A is 3.12 in; 80-100 A 2-pole and 70-100 A 3-pole are 3.50 in.

■ QO-PL is 4.55 in.

♦ 80-100 A 1-pole and 80-125 A 2-pole are 4.45 in.

★ 70-100 A 4.45 in.

▼ 80-100 A 1-pole and 80-125 A 2-pole are 6.78 in.

△ 70-100 A is 6.78 in.

## QB, QD, QG, QJ, Q4, FA, HD, HG, HJ, HL, JD, JG, JJ, JL, DG, DJ, DL, FI, KA, KI and LA Circuit Breakers

Circuit Breaker Catalogue No. Prefix	No. Poles	Fig. No.	Dimensions—Inches							
			A	B	C	D	E	F	G	H
QB, QD, QG, QJ	2	14	6.47	3.00	3.02	3.93	□	4.25	...	...
	3	15	6.47	4.50	3.02	3.93	□	4.25	1.50	0.75
FAL, FHL, FCL◇	1	13	6.00	1.50	3.16	4.13	0.44	5.13	1.50	...
	2	14	6.00	3.00◇	3.16	4.13	0.44	5.13	...	...
	3	15	6.00	4.50	3.16	4.13	0.44	5.13	1.50	0.75
HD, HG, HJ, HL*	2	14	6.40	2.74*	3.44	4.36	0.74	4.92	...	...
	3	15	6.40	4.12	3.44	4.36	0.74	4.92	1.38	0.69
JD, JG, JJ, JL	2 & 3	15	7.52	4.12	3.44	5.00	1.30	4.92	1.38	0.69
DG, DJ, DL	3	12	13.38	5.51	3.75	6.61	2.22	8.93	1.77	...
FIL, KAL, KHL, KCL, KIL	2 & 3	15	8.00	4.50	3.66	4.75	0.44	7.13	1.50	0.75
Q4L, LAL, LHL	2 & 3	15	11.00	6.00	4.06	5.84	0.88	9.25	2.00	1.00

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

◇ FCL 2-pole circuit breaker dimension B is 4.50 as in Fig. 15.

\* HJ and HL 2-pole circuit breaker dimension B is 4.12 as in Fig. 15.

# Moulded Case Circuit Breakers Dimensions and Shipping Weights

Class 500, 600

DE3 CIRCUIT BREAKERS

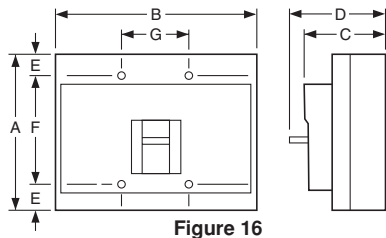


Figure 16

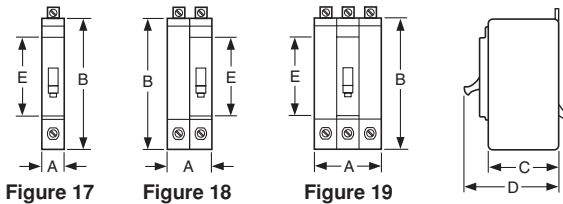


Figure 17

Figure 18

Figure 19

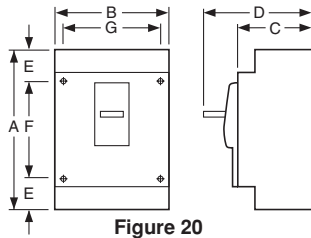


Figure 20

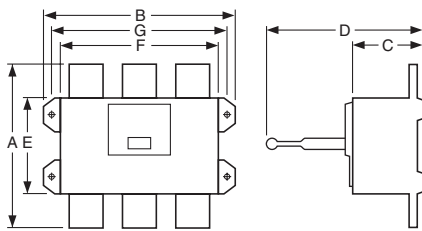


Figure 21

## LC, LI, LE, LX and LXI Circuit Breakers

Circuit Breaker Catalogue No. Prefix	No. of Poles	Fig. No.	Dimensions—Inches						
			A	B	C	D	E	F	G
LC, LI, LE, LX, LXI	2 & 3	16	11.86	7.50	5.48	6.74	0.55	10.75	2.50

## ED, EG and EJ Circuit Breakers

Circuit Breaker Catalogue No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches				
			A	B	C	D	E
ED, EG, EJ	1	17	0.98	5.66	3.09	4.05	3.32
	2	18	1.96	5.66	3.09	4.05	3.32
	3	19	2.94	5.66	3.09	4.05	3.32

## MG, MJ, PG, PJ, PL, RG, RJ and RL Circuit Breakers

Circuit Breaker Catalogue No. Prefix	No. of Poles	Fig. No.	Dimensions — Inches						
			A	B	C	D	E	F	G
MG, MJ	2, 3	20	12.80	8.27	5.53	8.05	4.19	7.87	7.87
PG, PJ, PL	2, 3	20	16.29	8.27	5.53	8.05	4.19	7.87	7.87
RG, RJ, RL	2, 3	21	15.00	16.54	6.30	14.38	8.73	14.25	15.35

Frame Size	Approx. Shipping Weight (Lbs.)
ED, EG, EJ 1-pole	2
ED, EG, EJ 2-pole	3
ED, EG, EJ 3-pole	4
FAL	2
FHL 1-pole	2
FAL	3
FHL 2-pole	3
FCL	3
FAL	5
FHL 3-pole	5
FCL	5
FIL	8
KAL	7
KHL	7
KCL	9
KIL	9
LAL	15
LHL	15

Frame Size	Approx. Shipping Weight (Lbs.)
LEL	25
LCL	
LIL	
LXL	
PG	32
PJ	
PL	
RG	52
RJ	
RL	
QB, QD, QG, QJ	4
Q4L	15

All weights are for 3-pole circuit breakers unless otherwise noted.

# Moulded Case Circuit Breaker Application Information

## Enclosure Types



Type 1



Type 3R



Type 7/9



Type 12

Provides Protection Against ...	Enclosure Type														
	Non-Hazardous Locations							Hazardous Locations							
	1	2	3	3R	4	4X	5	12	7A	7B	7C	7D	9E	9F	9G
Accidental contact with enclosed equipment	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dripping and light splashing of non corrosive liquids			X	X	X	X	X	X							
Limited amounts of falling dirt	X	X	X	X	X	X	X	X							
Windblown dust				X	X	X									
Rain, sleet, and external ice formation				X	X	X	X								
Hose directed water					X	X									
Corrosion						X									
Settling airborne dust, lint, fibers, and filings				X	X	X	X	X							
Circulating dust				X	X	X		X							
Acetylene									X						
Hydrogen, manufactured gas										X					
Ethyl ether, ethylene, cyclopropane										X	X				
Gasoline, hexane, naphtha, benzene, butane, propane										X	X	X			
Alcohol, acetone, benzol, natural gas, lacquer solvent										X	X	X			
Metal dust														X	
Carbon black, coal dust, coke dust															X
Flour, starch, grain dust															X
<b>Usage</b>															
Indoors	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Outdoors			X	X	X	X									

## Glossary

**accessory (device).** An electrical or mechanical device that performs a secondary or minor function apart from overcurrent protection.

**alarm switch (bell alarm).** An auxiliary switch that operates only upon the tripping of the circuit breaker with which it is associated.

**ambient temperature rating.** The ambient temperature of a circuit breaker on which its rated continuous current is based.

**arc chute (arc stack).** A series of steel plates assembled in an insulated housing over the stationary and movable contacts. The plates help cool and extinguish the arc when the circuit breaker contacts are separated under load.

**auxiliary switch.** A switch which is mechanically operated by the main switching device for signalling, interlocking or other purposes.

**bell alarm.** See alarm switch.

**branch circuit.** The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s).

**circuit breaker.** A device designed to open and close a circuit by non-automatic means and to open the circuit automatically on a predetermined overcurrent without injury to itself when properly applied within its rating.

**circuit breaker frame.** (1) The circuit breaker housing containing the current components, the current sensing components and the tripping and operating mechanisms. (2) That portion of an interchangeable trip unit circuit breaker remaining when the interchangeable trip unit is removed.

**coil clearing switch.** A mechanically-operated switch in series with the coil of a shunt trip device that breaks the coil circuit when the circuit breaker opens.

**continuous current rating (handle rating).** The maximum direct current or rms current, in amperes, at rated frequency which a device or an assembly will carry continuously without exceeding the specified limits of observable temperature rise.

**continuous load.** A load where the maximum current is expected to continue for three hours or more.

**current-limiting circuit breaker.** A circuit breaker that does not use a fusible element and when operating within its current-limiting range, limits the I<sup>2</sup>T let through to a value less than the I<sup>2</sup>T of a 1/2 cycle wave of symmetrical prospective current.

**current path (of a circuit breaker).** The current-carrying conductors within a circuit breaker between, and including, line and load terminations.

**electrical operator (motor operator).** A controlling device which is used to open, close and reset a circuit breaker.

**fixed mounting.** A circuit breaker mounted such that it cannot be removed without removing primary and sometimes secondary connections or mounting supports.

**frame size.** A term applied to a group to a group of moulded case circuit breakers which are physically interchangeable with each other. Frame size is expressed in amperes and corresponds to the largest ampere rating available in the group. The same frame size designation may be applied to more than one group of circuit breakers.

**frequency.** The number of cycles per second for an ac system.

**frequency rating.** The frequency of the circuit for which the circuit breaker is designed.

**ground fault.** An unintentional electrical path between a part operating normally at some potential to ground, and ground.

**ground fault delay.** The length of time the circuit breaker trip unit delays before initiating a trip signal to the circuit breaker after a ground fault has been detected.

**ground fault module.** An electronic accessory used with thermal-magnetic circuit breakers to provide branch circuit ground fault protection and ground-fault indication.

**ground fault pickup.** The level of ground fault current at which the trip system begins timing.

**handle rating.** Continuous current rating.

**I-Limiter.** The Square D Family of current-limiting circuit breakers.

**instantaneous pickup.** The current level at which the circuit breaker trips with no intentional time delay.

**instantaneous trip (as applied to circuit breakers).** A qualifying term indicating that no delay is purposely introduced in the action of the device.

**interrupting rating.** The highest current at rated voltage available at the circuit breaker's incoming terminals. When the circuit breaker is used at more than one voltage, the interrupting rating is shown for each voltage level. The interrupting rating of a circuit breaker must be equal to or greater than the available short circuit current at the point at which the circuit breaker is applied to the system.

**inverse time.** A qualifying term indicating that there is purposely introduced a delayed action, which delay decreased as the magnitude of the current increases.

**let-through.** An expression related to energy (measured in ampere-squared seconds) that passes through an overcurrent protective device during an interruption.

**MAG-GARD®.** The Square D family of instantaneous-trip circuit breakers (motor short-circuit protectors).

**moulded case circuit breaker.** A circuit breaker that is assembled as an integral unit in a supportive and enclosed housing of insulating material.

**motor short-circuit protector.** A recognized component with no thermal elements that provides short-circuit protection only.

**neutral current transformer.** A current transformer that encircles the neutral conductor; required on circuit breakers with ground-fault protection, when applied on a grounded system.

**non-automatic circuit breaker.** One which opens only in response to an act of an operator or by an accessory device.

**operating mechanism.** The mechanism by which the contacts are actuated.

**overcurrent.** Any current in excess of the rated current of equipment or the ampacity of a conductor.

**overcurrent trip element.** A device which, for a given pole of a circuit breaker, detects overcurrent and transmits the energy necessary to trip the breaker automatically. It may actuate the breaker operating mechanism directly or may form part of a trip unit.

**overcurrent trip switch.** See alarm switch.

**peak let-through.** The maximum peak current that passes through an overcurrent protective device during an interruption.

**push-to-trip button.** A button used to manually trip the circuit breaker.

**rated interrupting current.** A rating which is established under prescribed test conditions at a specified voltage and which is the maximum available current at which the circuit breaker may be applied.

**residual ground-fault sensing.** A means of providing equipment ground-fault protection using sensors on each individual phase.

**root-mean-square (rms).** The square root of the arithmetic mean of the squares of a set of numbers.

**rms current sensing.** A method of determining the true rms current of sinusoidal and non-sinusoidal waveforms.

**shunt trip.** A trip mechanism energized by a source of voltage which may be derived either from the main circuit or from an independent source.

**switching duty circuit breaker.** A circuit breaker intended to switch fluorescent lighting loads.

**terminal block.** The connections for control wiring.

**thermal-magnetic circuit breaker.** General term for circuit breakers that use bimetals and electromagnetic assemblies to provide both thermal and magnetic overcurrent protection.

**thermal trip.** A trip element consisting of a bimetal that bends because of the heat generated by current passing through it. The bimetal's bending force and deflection trips **the circuit breaker during overload conditions.**

**undervoltage trip.** An opening release which permits a circuit breaker to open automatically if the voltage across the terminals of its main circuit falls below a pre-determined value.

**zero-sequence ground-fault sensing.** A means of providing equipment ground-fault protection using a single sensor surrounding all phase and neutral conductors.