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Standards

Eaton's Cutler-Hammer Moulded Case Circuit Breakers are designed to conform with the following international standards:

- Australian Standard AS 2184 and AS 3947-2 Moulded Case Circuit Breakers.
- British Standards Institution Standard BS 4752: Part 1, Switchgear and Control Gear Part 1, Circuit Breakers.
- International Electrotechnical Commission Recommendations IEC 60947.2 Circuit Breakers. 
- Japanese T-Mark Standard Moulded Case Circuit Breakers.
- National Electrical Manufacturers Association Standards Publication No. AB1-1975 Moulded Case Circuit Breakers.
- South African Bureau of Standards, Standard SABS 156, Standard Specification for Moulded Case Circuit Breakers.
- Swiss Electro-Technical Association Standard SEV 947.2, Safety Regulations for Circuit Breakers.
- Union Technique de l'Electricite Standard NF C 63-120, Low Voltage Switchgear and Control Gear Circuit Breaker Requirements.
- Verband Deutscher Elektrotechnike (Association of German Electrical Engineers) Standard VDE 0660, Low Voltage Switchgear and Control Gear, Circuit Breakers.

Trademarks

CSA is a registered trademark of the Canadian Standards Association.

UL is a registered trademark of the Underwriters Laboratories Inc.

ISO is the registered trademark and sole property of the International Organization for Standardization.

NEMA is the registered trademark and service mark of the National Electrical Manufacturers Association.

Global Third Party Certification

Certification marks ensure product compliance with the total standard via the third party witnessing of tests by globally recognized independent certification organizations.

KEMA is a highly recognized, independent international organization that offers certification and inspection facilities for equipment in many industries. The KEMA-KEUR mark is the highest certification an electrical product can receive from KEMA. Our IEC 60947-2 Moulded Case Circuit Breakers are KEMA tested and certified. These breakers are also listed in accordance with UL 489 as well as CSA C22.2 No. 5.1.

KEMA and UL provide ongoing follow-up testing and inspections to ensure that Cutler-Hammer Moulded Case Circuit Breakers continue to meet their exacting standards.

Frame Sizes EG through RG (16 – 2500 Amperes)

General Information

Cutler-Hammer Moulded Case Circuit Breakers provide increased performance in considerably less space than standard circuit breakers or comparable fusible devices. Reduced system costs can also be realized because Cutler-Hammer Circuit Breakers are used in series rated systems, allowing the use of lower interrupting circuit breakers downstream.

Cutler-Hammer Circuit Breakers meet applicable IEC 947-2 standards, have been assigned ultimate and service interrupting ratings per IEC 947-2, and employ adjustable thermal and adjustable magnetic trips.

The Cutler-Hammer business family includes five frame sizes in ratings from 15 to 2500 amperes. Each frame size offers a choice of several interrupting capacities up to 100 kA at 415 volts ac (200 kA at 240 volts ac). This provides greater design flexibility than ever before possible while also helping to save space.

Cutler-Hammer Circuit Breakers virtually eliminate the need for redesign and they can be used to replace older circuit breakers in the same panelboards, feeder pillars, bus bar trunking tap-offs, individual enclosures, machine tool control panels, and motor control centres. In many cases, the same connecting straps, studs, and handle mechanisms can be retained and used.

Standard calibration is 40°C. For applications in high ambient temperature conditions, 50°C factory calibration is available.

Cutler-Hammer Circuit Breakers are also provided for dc applications. Interrupting ratings of 35 kA for the 600 ampere frame have been achieved for three-pole breakers in series at 600 volts dc.

The Most Logically Designed Contact Assembly

The flexibility and outstanding performance characteristics of Cutler-Hammer Circuit Breakers are made possible by the best contact designs in circuit breaker history. Our patented technology creates a high-speed “blow-open” action to handle the electromechanical forces produced by high-level fault currents.

Cutler-Hammer Circuit Breakers are operated by a toggle-type mechanism that is mechanically trip-free from the handle so that the contacts cannot be held closed against short circuit currents. Tripping due to overload or short circuits is clearly indicated by the position on the handle. This remarkably fast and dependable contact action is designed to enhance safety.

Thorough In-Plant Testing

The quality, dependability, and reliability of every Cutler-Hammer Circuit Breaker is ensured by a thorough program of in-plant testing. Two calibration tests are conducted on every pole of every circuit breaker to verify the trip mechanism, operating mechanism, continuity and accuracy.

ISO Certification

Cutler-Hammer Circuit Breakers are manufactured in ISO® certified facilities.

Current Limiting Characteristics

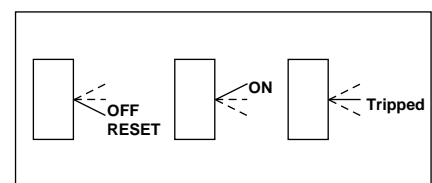
All Cutler-Hammer Circuit Breakers are current limiting because of their high repulsion contact arrangement and use of state-of-the-art arc extinguishing technology.

Operating Mechanisms

Cutler-Hammer Circuit Breakers have a toggle handle operating mechanism, which also serves as a switching position indicator. The indicator shows the positions of: ON, OFF and TRIPPED.

The toggle handle snaps into the TRIPPED position if the breaker is tripped by one of its overcurrent, short circuit, shunt or undervoltage releases. Before the circuit breaker can be reclosed following a trip-out, the toggle handle must be brought beyond the OFF position (RESET). The circuit breaker can then be reclosed.

As an additional switching position indicator for EG- to RG-Frame circuit breakers, there are two windows on the right and on the left of the toggle handle, in which the switching state is indicated by means of the colours red, green and white corresponding to the ON, OFF and TRIPPED positions respectively.



Positions of the Toggle Handle Drive

Frame Sizes EG through RG (16 – 2500 Amperes)

Panelboards

As both main and branch circuit protection devices.

Feeder Pillars

In distribution systems to provide main and branch circuit protection.

Switchgear

In distribution systems to provide main and branch circuit protection up to 2500 amperes (RG-Frame).

Bus Bar Trunking Tap-Offs

In bus bar trunking tap-offs to provide branch circuit protection (JG-Frame); and to provide feeder or branch circuit protection (JG- and LG-Frames).

Individual Enclosures

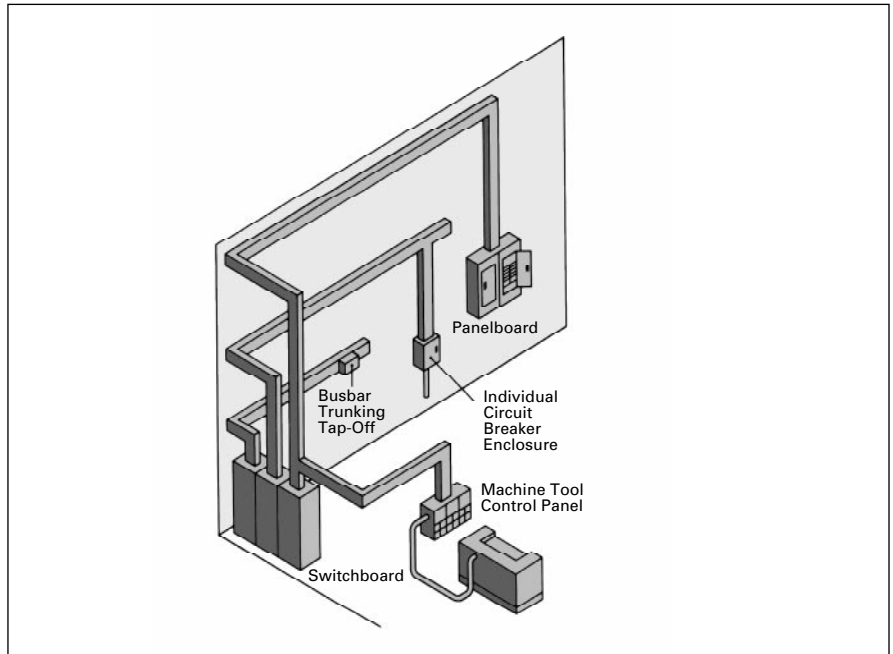
Completely assembled in enclosures to meet specific customer requirements.

Machine Tool Control Panels and Motor Control Centres

Applied for specific equipment requirements (EG-, JG- and LG-Frames).

Additional Applications

Special versions of each Cutler-Hammer frame are available to provide safe equipment control and protection in mining and other applications. Contact your Cutler-Hammer agent or distributor for additional information.






Typical Cutler-Hammer Applications

Frame	Continuous Ampere Rating Range	Type of Trip Unit					Moulded Case Switch
		Adjustable Thermal Fixed Magnetic	Fixed Thermal Fixed Magnetic	Adjustable Thermal Adjustable Magnetic	Earth Leakage	Digitrip™ RMS Electronic Trip Units	
E	16 – 160	■	■	–	■	–	■
J	20 – 250	–	–	■	■	■	■
L	100 – 630	–	–	■	■	■	■
N	400 – 1600	–	–	–	–	■	■
R	800 – 2500	–	–	–	–	■	■

Frame Sizes EG through LG

Electrical Characteristics

		EG								JG				LG				
																		
Maximum Rated Current (Amperes)		125, 160								250				400, 630				
Breaker Type		B	E	S	H				E	S	H	C	E	S	H	C		
Breaker Capacity (kA rms) ac 50 – 60 Hz																		
IEC 60947-2	220 – 240 Vac	I_{CU}	25	25	35	85	85	100	100	65	85	100	200	65	85	100	200	
		I_{CS}	25	25	35	43	43	50	50	65	85	100	150	65	85	100	150	
	380 – 415 Vac	I_{CU}	–	18	25	–	40	–	70	25	40	70	100	35	45	70	100	
		I_{CS}	–	18	25	–	30	–	35	25	40	70	75	35	45	70	75	
	660 – 690 Vac	I_{CU}	–	–	3	–	4	–	6	12	12	14	20	12	20	25	35	
		I_{CS}	–	–	3	–	3	–	3	6	6	7	10	6	10	13	18	
	250 Vdc ①	I_{CU}	10	10	10	35	35	42	42	10	35	42	42	–	22	42	42	
		I_{CS}	10	10	10	35	35	42	42	10	35	42	42	–	22	42	42	
NEMA®	240 Vac	25	25	35	85	85	100	100	65	85	100	–	–	65	100	200		
	480 Vac	–	18	25	–	35	–	65	25	35	65	–	–	35	65	100		
	600 Vac	–	–	–	–	–	–	–	18	25	35	–	–	25	35	50		
Number of Poles	1	2, 3, 4	2, 3, 4	1	2, 3, 4	1	2, 3, 4	2, 3, 4				3, 4						
Ampere Range	16 – 160 A								20 – 250 A				100 – 630 A					
Trip Units F = Fixed A = Adjustable T = Thermal M = Magnetic	FT-FM AT-FM								FT-AM AT-AM Electronic (Digitrip RMS 310)				FT-AM AT-AM Electronic (Digitrip RMS 310)					
Interchangeable	–								■				■					
	■								■				■					
Thermal Magnetic	■								■				■					
	■								■				■					
	Fixed								Adjustable				Adjustable					
Electronic rms ②	–								■				■					
	–								■				■					
	–								■ ③				■ ③					
	–								■ ③				■ ③					
Dimensions (mm)	H		W		D		H		W		D		H		W		D	
	1-Pole		139.7		25.4		76		177.8		105		103		–		–	
	2-Pole				50.8										630 A = 273		210	
	3-Pole				76.2										800 A = 406		280	
	4-Pole				101.6						140							
Weight (approximate) kgs.	1-Pole		2-Pole		3-Pole		4-Pole		2-Pole		3-Pole		4-Pole		3-Pole		4-Pole	
	0.45		0.91		1.36		1.81		5.2		5.2		7.0		630 A = 9.4/ 800 A = 11.3		630 A = 11.1/ 800 A = 14.4	



① 2 poles in series.

② Not suitable for dc application. 4-pole ground fault not available.

③ Contact factory for availability.

Frame Sizes NG and RG

Electrical Characteristics

		NG					RG				
											
Maximum Rated Current (Amperes)		800, 1250 ①					1600 ①		1600, 2000, 2500		
Breaker Type		S	H	C			S	H	C		
Breaker Capacity (kA rms) ac 50 – 60 Hz											
IEC 947-2	220 – 240 Vac	I_{CU}	85	100	200	85	135	200			
		I_{CS}	85	100	100	85	100	100			
	380 – 415 Vac	I_{CU}	50	70	100	50	70	100			
		I_{CS}	50	50	50	50	50	50			
	660 – 690 Vac	I_{CU}	20 ②	25 ②	35	20 ②	25	35			
		I_{CS}	10	13	18	10	13	18			
	250 Vdc	I_{CU}	–	–	–	–	–	–			
		I_{CS}	–	–	–	–	–	–			
NEMA	240 Vac		65	100	200	100	125	200			
	480 Vac		50	65	100	65	65	100			
	600 Vac		25	35	50	35	50	65			
Number of Poles		2, 3, 4					3		3, 4		
Ampere Range		400 – 1250 A					1600 A		800 – 2500 A		
Trip Units		Electronic (Digitrip RMS 310)					Electronic (Digitrip RMS 310, 610 and 910)				
		Interchangeable		–			–				
		Built-in		■			■				
Electronic ③	LI	–					■ ④				
	LS	■					■				
	LSI	■					■				
	LIG	–					■ ④				
	LSG	■					■				
	LSIG	■					■				
Dimensions (mm)		H	W		D	H	W		D		
	1-Pole	–	–		–	–	–		–		
	2-Pole	–	–		–	–	–		–		
	3-Pole	406	210		104	406	394		229		
	4-Pole		280				508				
Weight (approximate) kgs.		3-Pole			4-Pole		3-Pole			4-Pole	
		21.3			28.3		47			54	

① No UL® label above 1200 A ratings.

② IEC 60947-2 H.5 Annex H is not KEMA-KEUR tested.

③ Not suitable for dc application. 4-pole ground fault not available.

④ Available only on Digitrip 610 and 910 trip units.

Frame Sizes EG through RG

Electrical Characteristics

Technical Data	EG		JG		LG		NG	RG
Maximum Rated Current I_n Depending on the Version	160 A		250 A		400, 630 A		800, 1250, 1600 A	1600, 2000, 2500 A
Rated Insulation Voltage U, According to IEC 947-2 Main Conducting Paths Auxiliary Circuits	750 Vac 690 Vac		750 Vac 690 Vac		750 Vac 690 Vac		750 Vac 690 Vac	750 Vac 690 Vac
Rated Impulse Withstand Voltage U_{imp} Main Conducting Paths Auxiliary Circuits	6 kV 4 kV		8 kV 4 kV		8 kV 4 kV		8 kV 4 kV	8 kV 4 kV
Rated Operational Voltage U_e IEC NEMA	440 Vac 600 Y/347 Vac		690 Vac 600 Vac		690 Vac 600 Vac		690 Vac 600 Vac	690 Vac 600 Vac
Permissible Ambient Temperature	-20 to +70°C		-20 to +70°C		-20 to +70°C		-5 to +60°C	-5 to +60°C
Permissible Load for Various Ambient Temperatures Close to the Circuit Breaker, Related to the Rated Current of the Circuit Breaker ■ Circuit Breakers for Plant Protection - At 40°C - At 50°C - At 55°C - At 60°C - At 70°C ■ Circuit Breakers for Motor Protection - At 40°C - At 50°C - At 55°C - At 60°C - At 70°C ■ Circuit Breakers for Starter Combinations and Isolating Circuit Breakers - At 40°C - At 50°C - At 55°C - At 60°C - At 70°C	①	②	①	②	①	②	-	-
	100% 96% 93% 91% 86%	100% 92% 87% 83% 73%	100% 96% 94% 92% 88%	100% 94% 90% 87% 80%	100% 96% 93% 90% 84%	100% 91% 86% 82% 70%	100% 91% 85% 81% -	100% 100% 100% 100% -
	-	-	-	-	100% 100% 100% 100% 90%	-	-	-
	100% 100% 96% 91% 86%	100% 100% 96% 91% 86%	100% 100% 96% 82% 88%	100% 100% 96% 87% 88%	100% 100% 95% 90% 84%	100% 91% 85% 81% -	100% 100% 100% 100% -	
Rated Short Circuit Breaking Capacity (dc) Not for Circuit Breakers for Motor Protection (Time Constant $\tau = 10$ rms) 1 Conducting Path For F to L up to: 250 Vdc NEMA (Time Constant $\tau = 8$ rms) 1 Conducting Path 250 Vdc 2 Conducting Paths in Series 3 Conducting Paths in Series 440 Vdc 660 Vdc	20 kA Max.		20 kA Max.		20 kA Max.		③	③
	10 kA 22 kA	-	10 kA 22 kA	-	10 kA 22 kA	-	③ ③	③ ③
Main Switch Characteristics According to IEC 947-2 in Combination with Lockable Rotary Drives	Yes		Yes		Yes		Yes	Yes
Rated Short Circuit Breaking Capacity According to IEC 947-2 (at ac 50/60 Hz)	Rated Short Circuit Breaking Capacity See Table on Pages 4-5-6							
Endurance (Operating Cycles)	10,000		10,000		8,000		3,000	3,000
Maximum Switching Frequency	300 1/h		240 1/h		240 1/h		60 1/h	20 1/h
Conductor Cross Sections and Terminal Types for Main Conductors ■ Solid or Stranded ■ Finely Stranded with End Sleeve ■ Bus Bar Tightening Torque for Box Terminals Tightening Torque for Bus Bar Connection Pieces	Box Terminals 2.5 to 95 mm ² 2.5 to 50/70 mm ²	Box Terminals 50 to 150 mm ² 35 to 120 mm ²	Box Terminals 95 to 240 mm ² 70 to 150 mm ²	Flat Bar Terminals - - 600A 31 Nm 6 Nm	Flat Bar Terminals - - Optional 31 Nm 50 Nm	Flat Bar Terminals - - Optional 31 Nm 37 Nm	Flat Bar Terminals - - Optional 31 Nm 37 Nm	Flat Bar Terminals - - Optional 31 Nm 37 Nm
Conductor Cross Sections for Auxiliary Circuits with Terminal Connection or Terminal Strip ■ Solid ■ Finely Stranded with End Sleeve ■ With Brought-out Cable Ends ■ Tightening Torque for Fitting Screws	0.75 to 2.5 mm ² 0.75 to 2.5 mm ²	0.75 to 2.5 mm ² 0.75 to 2.5 mm ² 0.82 (AWG 18) mm ² 0.8 to 1.4 Nm	0.75 to 2.5 mm ² 0.75 to 2.5 mm ² 0.82 (AWG 18) mm ² 0.8 to 1.4 Nm	0.75 to 2.5 mm ² 0.75 to 2.5 mm ² 0.82 (AWG 18) mm ² 0.8 to 1.4 Nm	0.75 to 2.5 mm ² 0.75 to 2.5 mm ² 0.82 (AWG 18) mm ² 0.8 to 1.4 Nm	Up to 2x4 mm ² Up to 2x2.5 mm ² 0.82 (AWG 18) mm ² 0.8 to 1.4 Nm	Up to 2x4 mm ² Up to 2x2.5 mm ² 0.82 (AWG 18) mm ² 0.8 to 1.4 Nm	Up to 2x4 mm ² Up to 2x2.5 mm ² 0.82 (AWG 18) mm ² 0.8 to 1.4 Nm
Power Loss per Circuit Breaker at Maximum Rated Current I_n (The Power Losses of the Undervoltage Releases ("r" Releases) Must Be Observed if Necessary) at Three-Phase Symmetrical Load) ■ For Plant Protection ■ As Isolating Circuit Breaker ■ For Starter Combinations ■ For Motor Protection	50 W 40 W 40 W 50 W	75 W 75 W 45 W -	255 W 160 W 160 W 120 W	87/210 W 87/210 W -	220/270/400 W 220/270/400 W -	220/270/400 W 220/270/400 W -	220/270/400 W 220/270/400 W -	220/270/400 W 220/270/400 W -
Permissible Mounting Position								

① Thermal overload release set to the lower value.

② Thermal overload release set to the upper value, resp. fixed-setting thermal overload releases.

③ Not suitable for dc switching.

Frame Sizes EG through RG

Electrical Characteristics

Technical Data	EG	JG	LG	NG	RG
Auxiliary Switches					
Rated Thermal Current I _{th} Rated Making Capacity	6 A 20 A	6 A 20 A	6 A 20 A	6 A 20 A	6 A 20 A
ac (ac-15) – Rated Operational Voltage – Rated Operational Current	230/400/600 V 6/3/0.25 A	230/400/690 V 6/3/0.25 A	230/400/690 V 6/3/0.25 A	230/400/690 V 6/3/0.25 A	230/400/690 V 6/3/0.25 A
dc (dc-13) – Rated Operational Voltage – Rated Operational Current	24/125/250 V 6/0.5/0.25 A	24/125/240 V 6/0.5/0.15 A	24/125/240 V 6/0.5/0.15 A	24/125/240 V 6/0.5/0.15 A	24/125/240 V 6/0.5/0.15 A
Back-up Fuse Miniature Circuit Breaker	6/4/4 A 6/4 A	6/4/4 A 6/4 A	6/4/4 A 6/4 A	6/4/4 A 6/4 A	6/4/4 A 6/4 A
Releases					
Undervoltage Releases (“r” Releases) Response Voltage: – Drop (Breaker Tripped) U _s – Pickup (Breaker May Be Switched on) U _s	35 – 70% 85 – 110%	35 – 70% 85 – 110%	35 – 70% 85 – 110%	35 – 70% 85 – 110%	35 – 70% 85 – 110%
Power Consumption in Continuous Operation at:					
– 50/60 Hz 12 Vac	0.95 VA	1.9 VA	1.9 VA	1.9 VA	2.9 VA
– 50/60 Hz 24 Vac	0.72 VA	3.9 VA	3.9 VA	2.4 VA	3.1 VA
– 50/60 Hz 48 – 60 Vac	1.15 – 1.78 VA	2.5 – 3.8 VA	2.5 – 3.8 VA	2.3 – 4.1 VA	3.4 – 6.0 VA
– 50/60 Hz 110 – 127 Vac	.96 – 1.25 VA	1.8 – 2.4 VA	1.8 – 2.4 VA	3.4 – 4.2 VA	3.3 – 3.8 VA
– 50/60 Hz 208 – 240 Vac	1.28 – 1.68 VA	2.7 – 3.8 VA	2.7 – 3.8 VA	4.8 – 6.5 VA	4.2 – 7.2 VA
– 50/60 Hz 380 – 500 Vac	2.2 – 3.9 VA	3.4 – 5.8 VA	3.4 – 5.8 VA	6.8 – 12.0 VA	3.8 – 10.0 VA
– 12 Vdc	0.88 VA	1.6 W	1.6 W	2.6 W	3.4 W
– 24 Vdc	0.70 VA	3.1 W	3.1 W	3.6 W	4.3 W
– 48 – 60 Vdc	1.12 – 1.76 VA	2.0 – 3.1 W	2.0 – 3.1 W	3.5 – 5.5 W	4.8 – 7.2 W
– 110 – 125 Vdc	0.94 – 1.21 VA	1.6 – 2.2 W	1.6 – 2.2 W	2.9 – 3.6 W	3.3 – 3.8 W
– 220 – 250 Vdc	1.45 – 1.86 VA	3.1 – 4 W	3.1 – 4 W	4.8 – 6.3 W	6.6 – 7.5 W
Maximum Opening Time	50 ms	50 ms	50 ms	80 ms	80 ms
Shunt Trips					
Shunt Trips (“f” Releases) Response Voltage: – Pickup (Breaker Tripped) U _s	70 – 110%	70 – 110%	70 – 110%	70 – 110%	70 – 110%
Power Consumption in (Short Time) at:					
– 50/60 Hz 12 – 24 Vac	10 – 41 VA	87 – 405 VA	87 – 405 VA	86 – 631 VA	177 – 1207 VA
– 50/60 Hz 48 – 60 Vac	139 – 210 VA	710 – 1105 VA	710 – 1105 VA	48 – 71 VA	443 – 731 VA
– 50/60 Hz 48 – 127 Vac	–	–	–	–	–
– 50/60 Hz 110 – 240 Vac	83 – 360 VA	66 – 432 VA	66 – 432 VA	81 – 505 VA	323 – 1466 VA
– 50/60 Hz 380 – 440 Vac	–	127 – 188 VA	127 – 188 VA	43 – 68 VA	1193 – 1641 VA
– 50/60 Hz 380 – 600 Vac	418 – 1080 VA	–	–	–	–
– 50/60 Hz 480 – 600 Vac	–	34 – 60 VA	34 – 60 VA	41 – 69 VA	197 – 312 VA
– 12 – 24 Vdc	29 – 120 W	164 – 631 W	164 – 631 W	46 – 405 W	289 – 865 W
– 48 – 60 Vdc	475 – 720 W	830 – 1580 W	830 – 1580 W	58 – 94 W	468 – 696 W
– 110 – 125 Vdc	99 – 121 W	112 – 150 W	112 – 150 W	74 – 98 W	363 – 473 W
– 220 – 250 Vdc	–	40 – 58 W	40 – 58 W	38 – 49 W	513 – 665 W
Maximum Load Duration	Interrupts Automatically				
Maximum Opening Time	50 ms	50 ms	50 ms	62 ms	62 ms

Frame Sizes EG through LG

Electrical Characteristics

dc Switching Duty

The EG- to LG-Frame circuit breakers are also suitable for switching dc currents.

The NG- and RG-Frame circuit breakers, FWMP, KWMP and LWMP circuit breakers for motor protection are not suitable for dc currents due to the solid-state overcurrent release system.

For switching dc currents, however, the maximum permissible dc voltage per conducting path has to be considered.

For voltages higher than 250 volts, the series connection of two or three conducting paths is required.

As the current has to flow through all conducting paths so as to maintain the thermal tripping characteristics, the following circuit arrangements are recommended. With dc, the trip values of the instantaneous short circuit release ("n" release) are increased by 30 to 40%.

For 3- and 4-Pole Circuit Breakers

Proposed Circuit	Maximum Permissible Vdc U_e	Remarks
<p>NSI-5178a</p>	250 Vdc	Double-pole switching. If there is no risk of an earth fault, or if any earth fault which occurs is immediately eliminated (earth fault monitoring), the maximum permissible dc voltage can be 600 volts.
<p>NSI-5179a</p>	440 Vdc	Double-pole switching (earth system). The earthed pole must always be assigned to the individual conducting path, so that two paths are always in series in the event of an earth fault.
<p>NSI-5180</p>	600 Vdc	Single-pole switching (earthed system). Three conducting paths in series. The earthed pole must be assigned to the nonswitched conducting path.
<p>NSI-5181</p>	750 Vdc	Single-pole switching (earthed system). Four conducting paths in series. The earthed pole must be assigned to the nonswitched conducting path.

Multi-Function Electronic Trip Units for All Applications

Digitrip RMS Trip Units True rms Sensing

Digitrip RMS Trip Units utilize our proprietary SURE™ Chip and SURE Plus™ Chip microprocessor-based intelligence to provide true rms sensing, permitting increased accuracy and reliable system protection. True rms sensing is not susceptible to nuisance tripping when waveforms containing high harmonic currents are present.

Digitrip RMS 310

Digitrip RMS 310 Electronic Trip Units are available with Cutler-Hammer Circuit Breakers J-, L-, N- and R-Frames 20 through 2500 amperes. Digitrip RMS 310 Trip Units are available in four styles with either fixed or adjustable rating plugs^① which establishes the continuous ampere rating of the breaker.

Rating Plugs

If rating plugs are needed, they are frequency sensitive and may be specified for 50/60 Hz applications. Both fixed and adjustable rating plugs are available, providing further flexibility when applied to selectively coordinated systems.

Note: *Digitrip RMS rating plugs are not interchangeable with SELTRONIC™ rating plugs.*

Curve Shaping

When selectively coordinated systems are called for, Digitrip RMS 310 will provide a cost-effective solution for a variety of applications.

The standard Digitrip RMS 310^① includes an adjustable short time pickup setting encompassing an I^2t ramp function which provides the basic LS curve shaping function. JG- and LG-Frames have an adjustable long time delay.

The optional Digitrip RMS 310 provides additional flat response short time delay adjustments on an instantaneous setting to provide LSI curve shaping capability.

Digitrip RMS 310 Trip Units are available with ground fault pickup and flat response ground fault delay which provides the trip unit with full function LSG and LSIG curve shaping flexibility.^②

Digitrip RMS 310 Trip Units can effectively coordinate with both sophisticated upstream power breakers as well as downstream thermal magnetic breakers...making Digitrip RMS 310 Trip Units the cost-effective reliable choice for selectively coordinated systems.

Thermal Memory

All Digitrip RMS Trip Units incorporate a long delay and, when ordered with ground, a ground fault thermal memory feature. Thermal memory prevents the system from cumulative overheating due to repeated overcurrent events that may occur in quick succession.

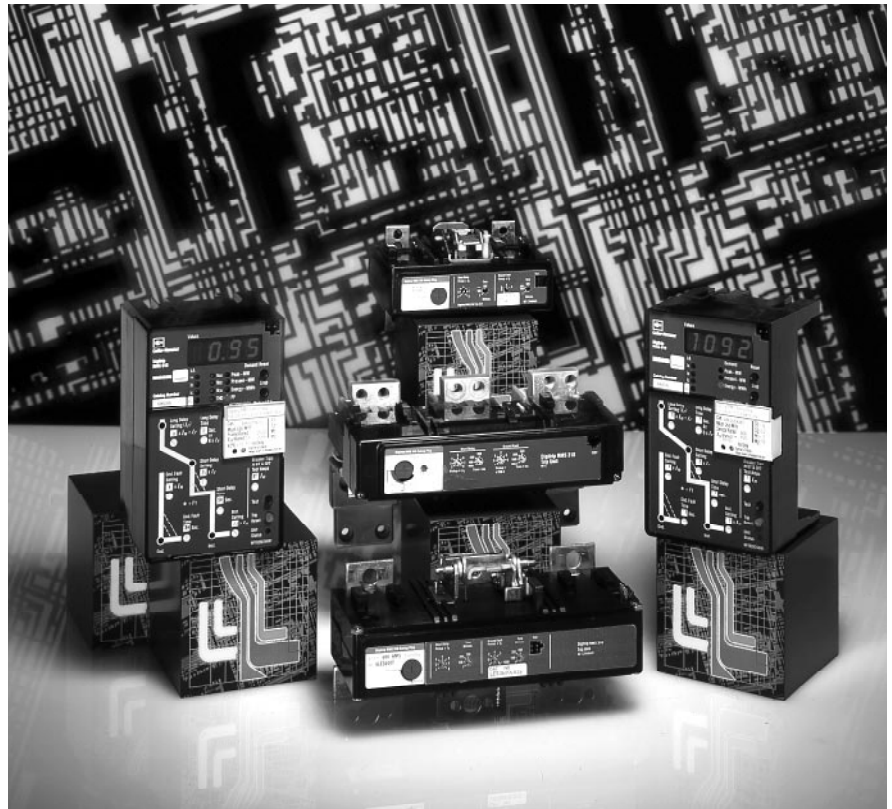
Digitrip RMS 610 and 910

Digitrip RMS 610 and 910 Trip Units are available with Cutler-Hammer R-Frame Circuit Breakers 800 through 2500 amperes. Digitrip 610 and 910 Trip Units provide unparalleled system protection with the added convenience of a local display.

Curve Shaping

Digitrip RMS 610 and 910 Trip Units are available with up to nine curve shaping choices achieved by adjusting up to seven switches on the front of the unit for optimum system coordination. Maximum curve shaping flexibility is provided by dependent long and short delay adjustments that are long delay pickup (I_p) based, depicted on the front of the unit by the blue portion of the time-current curve.

Additional coordination capability can be provided by utilizing the short delay and ground fault zone selective interlocking features available on these trip units.



R-Frame Digitrip RMS 310, 610 and 910 Trip Units (Non-interchangeable)

^① JG- and LG- frames have selectable long time delay (t_{LD}) and pickup settings (I_p). A rating plug is not required.
^② Contact factory for availability of ground fault for LG-Frame trip unit.

Frame Size RG

System Diagnostics

Digitrip RMS 610 and 910 models of trip units provide long delay, short delay, instantaneous, and ground fault cause of trip LEDs on the front of the unit. Their display shows a magnitude of trip information, as well as remote signal contacts, for improved system alarming.

System Monitoring

Digitrip 610 and 910 Trip Units have the capability to monitor phase currents as well as neutral or ground currents. This information is displayed on a large digital display mounted on the unit.

Digitrip RMS 910 Trip Units can also provide the user with power and energy monitoring capability. Peak power demand, present power

demand, and total energy, as well as forward and reverse energy can be monitored with this unit.

Digitrip RMS 910 Trip Units have the additional capability of monitoring line-to-line voltage as well as system power factor. Both parameters are displayed in the digital display window and are supported by LEDs to indicate which parameter is being displayed.

Harmonics Monitoring

Digitrip RMS 910 Trip Units are capable of displaying values of current harmonics in the digital display window. Percentage of harmonic content can be monitored for each phase, neutral or ground, up to the 27th harmonic. Additionally, a total harmonic distortion value can be calculated and displayed.

Communications

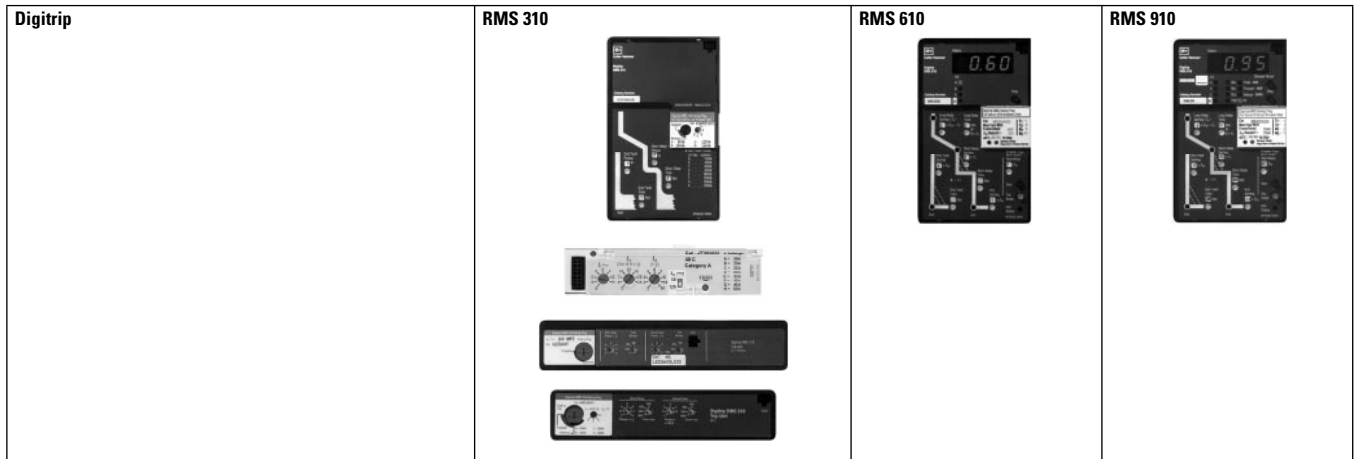
Digitrip RMS 910 units have built-in communications options to allow all protection, monitoring, and control information to be transmitted back to a central location via the Cutler-Hammer PowerNet System.

Field Testing

Integral field testing capability is provided on all 610 and 910 Trip Units. No additional test set is needed to perform both trip and no trip field testing.

Frame Sizes JG through RG

Digitrip RMS Electronic Trip Unit Selection Guide ^①



Breaker Type				
Cutler-Hammer Frame(s)	JG-, LG-, NG- and RG-Frames	RG-Frame	RG-Frame	RG-Frame
Ampere Rating	20 – 2500 A	800 – 2500 A	800 – 2500 A	800 – 2500 A
Interrupting Rating at 415 V	35, 70, 100 kA	70, 100 kA	70, 100 kA	70, 100 kA

Trip Unit Sensing				
rms Sensing	Yes	Yes	Yes	Yes

Protection and Coordination					
Protection	Ordering Options	LS, LSG	LSI, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG
	Fixed Rating Plug (I _n) ^②	Yes	Yes	Yes	Yes
	Overtemperature Trip	Yes	Yes	Yes	Yes
Long Delay	Adjustable Rating Plug (I _n) ^②	Yes	Yes	No	No
	Long Delay Setting	0.5 – 1.0 (I _n) ^③	0.5 – 1.0 (I _n) ^③	0.5 – 1.0 x (I _n)	0.5 – 1.0 x (I _n)
	Long Delay Time I ² t	12 Seconds ^④	12 Seconds ^④	2 – 24 Seconds	2 – 24 Seconds
	Long Delay Thermal Memory	Yes	Yes	Yes	Yes
	High Load Alarm	No	No	0.85 x I _r	0.85 x I _r
Short Delay	Short Delay Setting	200 – 800% x (I _n) ^⑤	200 – 800% x (I _n) ^⑤	200 – 600% S1 & S2 x (I _r)	200 – 600% S1 & S2 x (I _r)
	Short Delay Time I ² t	100 ms	No	100 – 500 ms	100 – 500 ms
	Short Delay Time Flat	No	1 – 300 ms	100 – 500 ms	100 – 500 ms
	Short Delay Time ZSI	No	No	Yes	Yes
Instantaneous	Instantaneous Setting	No	200 – 800% x (I _n) ^⑥	200 – 600% M1 & M2 x (I _n)	200 – 600% M1 & M2 x (I _n)
	Discriminator	No	No	Yes ^⑦	Yes ^⑦
	Instantaneous Override	Yes	Yes	Yes	Yes
Ground Fault	Ground Fault Setting	Var/Frame ^⑧	Var/Frame ^⑧	25 – 100% x (I _n) ^⑧	25 – 100% x (I _n) ^⑧
	Fault Delay I ² t	No	No	100 – 500 ms	100 – 500 ms
	Ground Fault Delay Flat	1 – 500 ms ^⑨	1 – 500 ms ^⑨	1 – 500 ms	1 – 500 ms
	Ground Fault ZSI	No	No	Yes	Yes
	Ground Fault Thermal Memory	Yes	Yes	Yes	Yes

System Diagnostics					
	Cause of Trip LEDs	No	No	Yes	Yes
	Magnitude of Trip Information	No	No	Yes	Yes
	Remote Signal Contacts	No	No	Yes	Yes

System Monitoring					
	Digital Display	No	No	Yes	Yes
	Current	No	No	Yes	Yes
	Voltage	No	No	No	Yes
	Power and Energy	No	No	No	Yes
	Power Quality — Harmonics	No	No	No	Yes
	Power Factor	No	No	No	Yes

System Communications					
	PowerNet™	No	No	No	Yes

Field Testing					
	Testing Method ^③	Test Set	Test Set	Integral	Integral

① Not available on 4-pole breakers.
 ② JG- and LG-Frames have selectable settings instead of a rating plug.
 ③ Set if adjustable rating plug.
 ④ JG- and LG-Frames have adjustable long delay times of 2 – 24 seconds.

⑤ 2500 A RG-Frame 200 – 600% x (I_n).
 ⑥ JG-Frame also has a 14X setting.
 ⑦ LS, LSG only.
 ⑧ Not to exceed 1200 A.
 ⑨ JG- and LG-Frames are 1 – 300 ms.

I_n = Rating plug rating.
 I_r = LDPU setting.

Frame Size EG, 15 – 125 Amperes

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①	IC Rating at 415/480V							
	1-Pole		2-Pole ②		3-Pole ③		4-Pole	
	Fixed Thermal Fixed Magnetic	Fixed Thermal Fixed Magnetic	Fixed Thermal Fixed Magnetic	Adjustable Thermal ① Fixed Magnetic	Thermal Range	Fixed Thermal Fixed Magnetic	Adjustable Thermal ① Fixed Magnetic	Thermal Range

Complete Circuit Breaker ③
Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware

IEC/CE/UL/CSA 18/18 (I _{CU} / I _{CS})								
15	EGB1015FFG	EGB2015FFG	EGB3015FFG	—	—	EGB4015FFG	—	—
16	EGB1016FFG	EGB2016FFG	EGB3016FFG	—	—	EGB4016FFG	—	—
20	EGB1020FFG	EGB2020FFG	EGB3020FFG	EGB3020AFG	16 – 20	EGB4020FFG	EGB4020AFG	16 – 20
25	EGB1025FFG	EGB2025FFG	EGB3025FFG	EGB3025AFG	20 – 25	EGB4025FFG	EGB4025AFG	20 – 25
30	EGB1030FFG	EGB2030FFG	EGB3030FFG	—	—	EGB4030FFG	—	—
32	EGB1032FFG	EGB2032FFG	EGB3032FFG	EGB3032AFG	25 – 32	EGB4032FFG	EGB4032AFG	25 – 32
35	EGB1035FFG	EGB2035FFG	EGB3035FFG	—	—	EGB4035FFG	—	—
40	EGB1040FFG	EGB2040FFG	EGB3040FFG	EGB3040AFG	32 – 40	EGB4040FFG	EGB4040AFG	32 – 40
45	EGB1045FFG	EGB2045FFG	EGB3045FFG	—	—	EGB4045FFG	—	—
50	EGB1050FFG	EGB2050FFG	EGB3050FFG	EGB3050AFG	40 – 50	EGB4050FFG	EGB4050AFG	40 – 50
60	EGB1060FFG	EGB2060FFG	EGB3060FFG	—	—	EGB4060FFG	—	—
63	EGB1063FFG	EGB2063FFG	EGB3063FFG	EGB3063AFG	50 – 63	EGB4063FFG	EGB4063AFG	50 – 63
70	EGB1070FFG	EGB2070FFG	EGB3070FFG	—	—	EGB4070FFG	—	—
80	EGB1080FFG	EGB2080FFG	EGB3080FFG	EGB3080AFG	63 – 80	EGB4080FFG	EGB4080AFG	63 – 80
90	EGB1090FFG	EGB2090FFG	EGB3090FFG	—	—	EGB4090FFG	—	—
100	EGB1100FFG	EGB2100FFG	EGB3100FFG	EGB3100AFG	80 – 100	EGB4100FFG	EGB4100AFG	80 – 100
125	EGB1125FFG	EGB2125FFG	EGB3125FFG	EGB3125AFG	100 – 125	EGB4125FFG	EGB4125AFG	100 – 125

IEC/CE/UL/CSA 25/25 (I _{CU} / I _{CS})								
15	—	EGE2015FFG	EGE3015FFG	—	—	EGE4015FFG	—	—
16	—	EGE2016FFG	EGE3016FFG	—	—	EGE4016FFG	—	—
20	—	EGE2020FFG	EGE3020FFG	EGE3020AFG	16 – 20	EGE4020FFG	EGE4020AFG	16 – 20
25	—	EGE2025FFG	EGE3025FFG	EGE3025AFG	20 – 25	EGE4025FFG	EGE4025AFG	20 – 25
30	—	EGE2030FFG	EGE3030FFG	—	—	EGE4030FFG	—	—
32	—	EGE2032FFG	EGE3032FFG	EGE3032AFG	25 – 32	EGE4032FFG	EGE4032AFG	25 – 32
35	—	EGE2035FFG	EGE3035FFG	—	—	EGE4035FFG	—	—
40	—	EGE2040FFG	EGE3040FFG	EGE3040AFG	32 – 40	EGE4040FFG	EGE4040AFG	32 – 40
45	—	EGE2045FFG	EGE3045FFG	—	—	EGE4045FFG	—	—
50	—	EGE2050FFG	EGE3050FFG	EGE3050AFG	40 – 50	EGE4050FFG	EGE4050AFG	40 – 50
60	—	EGE2060FFG	EGE3060FFG	—	—	EGE4060FFG	—	—
63	—	EGE2063FFG	EGE3063FFG	EGE3063AFG	50 – 63	EGE4063FFG	EGE4063AFG	50 – 63
70	—	EGE2070FFG	EGE3070FFG	—	—	EGE4070FFG	—	—
80	—	EGE2080FFG	EGE3080FFG	EGE3080AFG	63 – 80	EGE4080FFG	EGE4080AFG	63 – 80
90	—	EGE2090FFG	EGE3090FFG	—	—	EGE4090FFG	—	—
100	—	EGE2100FFG	EGE3100FFG	EGE3100AFG	80 – 100	EGE4100FFG	EGE4100AFG	80 – 100
125	—	EGE2125FFG	EGE3125FFG	EGE3125AFG	100 – 125	EGE4125FFG	EGE4125AFG	100 – 125

IEC/CE/UL/CSA 40/35 (I _{CU} / I _{CS})								
15	EGS1015FFG	EGS2015FFG	EGS3015FFG	—	—	EGS4015FFG	—	—
16	EGS1016FFG	EGS2016FFG	EGS3016FFG	—	—	EGS4016FFG	—	—
20	EGS1020FFG	EGS2020FFG	EGS3020FFG	EGS3020AFG	16 – 20	EGS4020FFG	EGS4020AFG	16 – 20
25	EGS1025FFG	EGS2025FFG	EGS3025FFG	EGS3025AFG	20 – 25	EGS4025FFG	EGS4025AFG	20 – 25
30	EGS1030FFG	EGS2030FFG	EGS3030FFG	—	—	EGS4030FFG	—	—
32	EGS1032FFG	EGS2032FFG	EGS3032FFG	EGS3032AFG	25 – 32	EGS4032FFG	EGS4032AFG	25 – 32
35	EGS1035FFG	EGS2035FFG	EGS3035FFG	—	—	EGS4035FFG	—	—
40	EGS1040FFG	EGS2040FFG	EGS3040FFG	EGS3040AFG	32 – 40	EGS4040FFG	EGS4040AFG	32 – 40
45	EGS1045FFG	EGS2045FFG	EGS3045FFG	—	—	EGS4045FFG	—	—
50	EGS1050FFG	EGS2050FFG	EGS3050FFG	EGS3050AFG	40 – 50	EGS4050FFG	EGS4050AFG	40 – 50
60	EGS1060FFG	EGS2060FFG	EGS3060FFG	—	—	EGS4060FFG	—	—
63	EGS1063FFG	EGS2063FFG	EGS3063FFG	EGS3063AFG	50 – 63	EGS4063FFG	EGS4063AFG	50 – 63
70	EGS1070FFG	EGS2070FFG	EGS3070FFG	—	—	EGS4070FFG	—	—
80	EGS1080FFG	EGS2080FFG	EGS3080FFG	EGS3080AFG	63 – 80	EGS4080FFG	EGS4080AFG	63 – 80
90	EGS1090FFG	EGS2090FFG	EGS3090FFG	—	—	EGS4090FFG	—	—
100	EGS1100FFG	EGS2100FFG	EGS3100FFG	EGS3100AFG	80 – 100	EGS4100FFG	EGS4100AFG	80 – 100
125	EGS1125FFG	EGS2125FFG	EGS3125FFG	EGS3125AFG	100 – 125	EGS4125FFG	EGS4125AFG	100 – 125

IEC/CE/UL/CSA 70/65 (I _{CU} / I _{CS})								
15	EGH1015FFG	EGH2015FFG	EGH3015FFG	—	—	EGH4015FFG	—	—
16	EGH1016FFG	EGH2016FFG	EGH3016FFG	—	—	EGH4016FFG	—	—
20	EGH1020FFG	EGH2020FFG	EGH3020FFG	EGH3020AFG	16 – 20	EGH4020FFG	EGH4020AFG	16 – 20
25	EGH1025FFG	EGH2025FFG	EGH3025FFG	EGH3025AFG	20 – 25	EGH4025FFG	EGH4025AFG	20 – 25
30	EGH1030FFG	EGH2030FFG	EGH3030FFG	—	—	EGH4030FFG	—	—
32	EGH1032FFG	EGH2032FFG	EGH3032FFG	EGH3032AFG	25 – 32	EGH4032FFG	EGH4032AFG	25 – 32
35	EGH1035FFG	EGH2035FFG	EGH3035FFG	—	—	EGH4035FFG	—	—
40	EGH1040FFG	EGH2040FFG	EGH3040FFG	EGH3040AFG	32 – 40	EGH4040FFG	EGH4040AFG	32 – 40
45	EGH1045FFG	EGH2045FFG	EGH3045FFG	—	—	EGH4045FFG	—	—
50	EGH1050FFG	EGH2050FFG	EGH3050FFG	EGH3050AFG	40 – 50	EGH4050FFG	EGH4050AFG	40 – 50
60	EGH1060FFG	EGH2060FFG	EGH3060FFG	—	—	EGH4060FFG	—	—
63	EGH1063FFG	EGH2063FFG	EGH3063FFG	EGH3063AFG	50 – 63	EGH4063FFG	EGH4063AFG	50 – 63
70	EGH1070FFG	EGH2070FFG	EGH3070FFG	—	—	EGH4070FFG	—	—
80	EGH1080FFG	EGH2080FFG	EGH3080FFG	EGH3080AFG	63 – 80	EGH4080FFG	EGH4080AFG	63 – 80
90	EGH1090FFG	EGH2090FFG	EGH3090FFG	—	—	EGH4090FFG	—	—
100	EGH1100FFG	EGH2100FFG	EGH3100FFG	EGH3100AFG	80 – 100	EGH4100FFG	EGH4100AFG	80 – 100
125	EGH1125FFG	EGH2125FFG	EGH3125FFG	EGH3125AFG	100 – 125	EGH4125FFG	EGH4125AFG	100 – 125

① 16, 32, 63 A are not UL listed ratings and adjustable thermal not UL listed.

② Contact factory for availability of 2-pole breakers.

③ Three-pole moulded case switch is catalogue number EGK3125KSG.

Frame Size EG, 15 – 125 Amperes

Selection Guide and Ordering Information

Line and Load Terminals

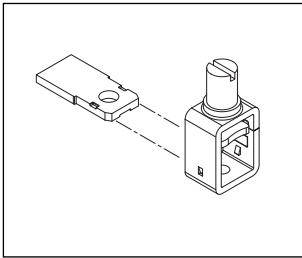
EG-Frame circuit breakers and moulded case switches have line and load terminals as standard equipment.

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Metric Wire Range mm ²	AWG Wire Range	Catalogue Number Package of 3 Terminals
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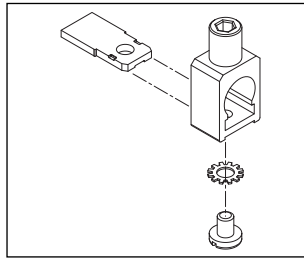
Standard Cu/Al Pressure Type Terminals

125	Steel	Cu/Al	2.5-95	#14-3/0	3T125EF ①
125	Aluminium	Cu/Al	2.5-50	#14-1/0	3TA125EF
125	Aluminium	Cu/Al	16-70	#6-3/0	3TA150EF
160					

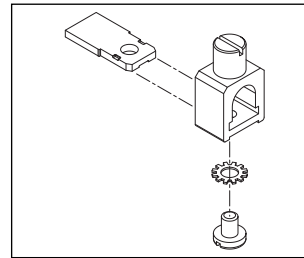
Catalogue Number



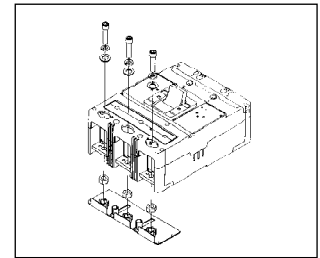
3T125EF ①



3TA125EF



3TA150EF



EF3RTWK, 3-Pole – Metric
 EF4RTWK, 4-Pole – Metric
 EF3RTDK, 3-Pole – Imperial
 EF4RTDK, 4-Pole – Imperial

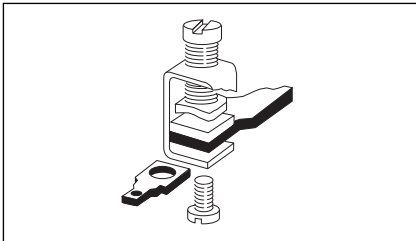
Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer.

Caution: Collar must surround conductor.

Insert collar enclosing conductor and centre on extrusion. Tighten securely with screw and washer.

Endcap kits are used on the E-Frame breaker line side to connect bus bar or similar electrical connections. Includes hardware.

Control Wire Terminal Kit



For use with steel or stainless steel ① terminals only.

Package of 12 – Priced Individually
Catalogue Number – EFCWTK

Interphase Barriers

The interphase barrier is available for extended insulation between circuit breaker poles. Specify quantity when ordering.

Package of 2
Catalogue Number – EFIPBK

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or moulded case switch. (Included with breaker.)

DIN Rail Adapter	Catalogue Number
3- or 4-Pole	EF34DIN

Terminal Shields

The terminal shield is available for line terminal areas in 2-, 3- and 4-pole circuit breakers. Special terminal shields are also available for use when an electrical (solenoid) operator is mounted on the circuit breaker. The standard style number by pole for each terminal shield is for a package of 10 and is priced per each package. Special terminal shields are packaged individually.

Number of Poles	Standard Package of 10	IP30 Protection
	Catalogue Numbers – Priced Individually	
2	EFTS2K	
3	EFTS3K	
4	EFTS4K	

Terminal End Covers

The terminal end cover is available for 3-pole circuit breakers only. Two conductor opening sizes are available. Specify quantity (one per circuit breaker) when ordering.

Conductor Opening Diameter – mm (Inches)	Catalogue Number
6.35 (0.25)	EFTC3K
10.41 (0.41)	EFTC4K

① Standard line and load terminals.

Frame Size JG, 100 – 250 Amperes

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C	Magnetic Range	IC Rating at 415/480 V						
		2-Pole		3-Pole			4-Pole ①	
		Fixed Thermal Adjustable Magnetic	Fixed Thermal Adjustable Magnetic	Adjustable Thermal Adjustable Magnetic ②	Thermal Range	Fixed Thermal Adjustable Magnetic	Adjustable Thermal Adjustable Magnetic ②	Thermal Range

Complete Circuit Breaker

Includes Frame, Thermal-Magnetic Trip Units Standard Terminals and Mounting Hardware

IEC/CE/UL/CSA 25/25 (I _{CU} / I _{CS})								
70	350 – 700	JGE2070FAG	JGE3070FAG	–	–	JGE4070FAG	–	–
90	450 – 900	JGE2090FAG	JGE3090FAG	–	–	JGE4090FAG	–	–
100	500 – 1000	JGE2100FAG	JGE3100FAG	JGE3100AAG	63 – 100	JGE4100FAG	JGE4100AAG	63 – 100
125	625 – 1250	JGE2125FAG	JGE3125FAG	JGE3125AAG	100 – 125	JGE4125FAG	JGE4125AAG	100 – 125
150	750 – 1500	JGE2150FAG	JGE3150FAG	–	–	JGE4150FAG	–	–
160	800 – 1600	–	JGE3160FAG ②	JGE3160AAG	125 – 160	JGE4160FAG ②	JGE4160AAG	125 – 160
175	875 – 1750	JGE2175FAG	JGE3175FAG	–	–	JGE4175FAG	–	–
200	1000 – 2000	JGE2200FAG	JGE3200FAG	JGE3200AAG	160 – 200	JGE4200FAG	JGE4200AAG	160 – 200
225	1125 – 2250	JGE2225FAG	JGE3225FAG	–	–	JGE4225FAG	–	–
250	1250 – 2500	JGE2250FAG	JGE3250FAG	JGE3250AAG	200 – 250	JGE4250FAG	JGE4250AAG	200 – 250

IEC/CE/UL/CSA 40/35 (I _{CU} / I _{CS})								
70	350 – 700	JGS2070FAG	JGS3070FAG	–	–	JGS4070FAG	–	–
90	450 – 900	JGS2090FAG	JGS3090FAG	–	–	JGS4090FAG	–	–
100	500 – 1000	JGS2100FAG	JGS3100FAG	JGS3100AAG	63 – 100	JGS4100FAG	JGS4100AAG	63 – 100
125	625 – 1250	JGS2125FAG	JGS3125FAG	JGS3125AAG	100 – 125	JGS4125FAG	JGS4125AAG	100 – 125
150	750 – 1500	JGS2150FAG	JGS3150FAG	–	–	JGS4150FAG	–	–
160	800 – 1600	–	JGS3160FAG ②	JGS3160AAG	125 – 160	JGS4160FAG ②	JGS4160AAG	125 – 160
175	875 – 750	JGS2175FAG	JGS3175FAG	–	–	JGS4175FAG	–	–
200	1000 – 2000	JGS2200FAG	JGS3200FAG	JGS3200AAG	160 – 200	JGS4200FAG	JGS4200AAG	160 – 200
225	1125 – 2250	JGS2225FAG	JGS3225FAG	–	–	JGS4225FAG	–	–
250	1250 – 2500	JGS2250FAG	JGS3250FAG	JGS3250AAG	200 – 250	JGS4250FAG	JGS4250AAG	200 – 250

IEC/CE/UL/CSA 70/65 (I _{CU} / I _{CS})								
70	350 – 700	JGH2070FAG	JGH3070FAG	–	–	JGH4070FAG	–	–
90	450 – 900	JGH2090FAG	JGH3090FAG	–	–	JGH4090FAG	–	–
100	500 – 1000	JGH2100FAG	JGH3100FAG	JGH3100AAG	63 – 100	JGH4100FAG	JGH4100AAG	63 – 100
125	625 – 1250	JGH2125FAG	JGH3125FAG	JGH3125AAG	100 – 125	JGH4125FAG	JGH4125AAG	100 – 125
150	750 – 1500	JGH2150FAG	JGH3150FAG	–	–	JGH4150FAG	–	–
160	800 – 1600	–	JGH3160FAG ②	JGH3160AAG	125 – 160	JGH4160FAG ②	JGH4160AAG	125 – 160
175	875 – 1750	JGH2175FAG	JGH3175FAG	–	–	JGH4175FAG	–	–
200	1000 – 2000	JGH2200FAG	JGH3200FAG	JGH3200AAG	160 – 200	JGH4200FAG	JGH4200AAG	160 – 200
225	1125 – 2250	JGH2225FAG	JGH3225FAG	–	–	JGH4225FAG	–	–
250	1250 – 2500	JGH2250FAG	JGH3250FAG	JGH3250AAG	200 – 250	JGH4250FAG	JGH4250AAG	200 – 250

Component Frame Only

IEC/CE/UL/CSA 25/25 (I _{CU} / I _{CS})								
250	–	JGE2250NN	JGE3250NN	–	–	JGE4250NN	–	–

IEC/CE/UL/CSA 40/35 (I _{CU} / I _{CS})								
250	–	JGS2250NN	JGS3250NN	–	–	JGS4250NN	–	–

IEC/CE/UL/CSA 70/65 (I _{CU} / I _{CS})								
250	–	JGH2250NN	JGH3250NN	–	–	JGH4250NN	–	–

Thermal-Magnetic Trip Unit

70	350 – 700	JT2070FA	JT3070FA	–	–	JT4070FA	–	–
90	450 – 900	JT2090FA	JT3090FA	–	–	JT4090FA	–	–
100	500 – 1000	JT2100FA	JT3100FA	JT3100AA ②	63 – 100	JT4100FA	JT4100AA ②	63 – 100
125	625 – 1250	JT2125FA	JT3125FA	JT3125AA ②	100 – 125	JT4125FA	JT4125AA ②	100 – 125
150	750 – 1500	JT2150FA	JT3150FA	–	–	JT4150FA	–	–
160	800 – 1600	JT2160FA ②	JT3160FA ②	JT3160AA ②	125 – 160	JT4160FA ②	JT4160AA ②	125 – 160
175	875 – 1750	JT2175FA	JT3175FA	–	–	JT4175FA	–	–
200	1000 – 2000	JT2200FA	JT3200FA	JT3200AA ②	160 – 200	JT4200FA	JT4200AA ②	160 – 200
225	1125 – 2250	JT2225FA	JT3225FA	–	–	JT4225FA	–	–
250	1250 – 2500	JT2250FA	JT3250FA	JT3250AA ②	200 – 250	JT4250FA	JT4250AA ②	200 – 250

Electronic Digitrip 310 Trip Unit ⑤

Frame Size (Amperes)	LS	LSI	LSG ③	LSIG ③
50	JT305033	JT305032	JT305035	JT305036
100	JT310033	JT310032	JT310035	JT310036
160	JT316033	JT316032	JT316035	JT316036
250	JT325033	JT325032	JT325035	JT325036

Moulded Case Switches ④⑤ (Includes Line and Load Collars)

Ampere Rating	Number of Poles	Catalogue Number
250	3 4	JGK3250KSG JGK7250KSG ⑥

① Neutral protection is indicated by the fourth character: 4 = 0%, 8 = adjustable 0 – 60% and 9 = 0 – 100%.

② IEC-EN 60947-2 only.

③ Contact factory for availability.

④ For 2-pole applications, use outer poles of a 3-pole MCS.

⑤ For ac use only.

⑥ 100% neutral protection.

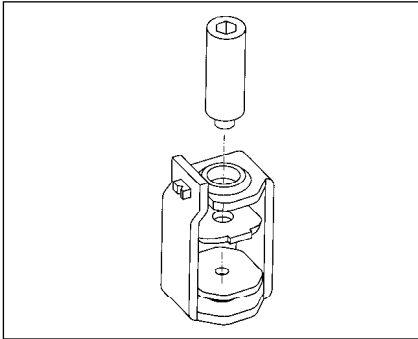
Selection Guide and Ordering Information

Line and Load Terminals

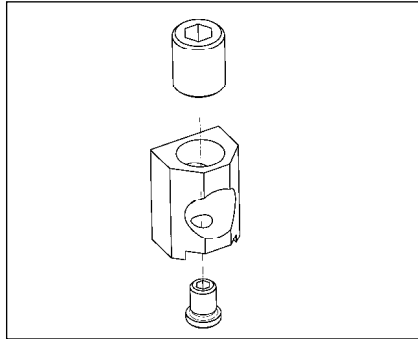
JG-Frame circuit breakers include Cu/Al terminals T250FJ as standard. When optional copper only terminals are required, order by catalogue number.

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Metric Wire Range mm ²	AWG Wire Range/Number of Conductors	Catalogue Number
Standard Pressure Type Terminals					
250	Stainless Steel	Cu	25 – 185	#4 – 350 (1)	T250FJ ①②
250	Aluminium	Cu/Al	25 – 185	#4 – 350 (1)	TA250FJ ①
Optional Copper and Cu/Al Pressure Type Terminals					
250	Copper	Cu/Al	25 – 185	#4 – 350 (1)	TC250FJ

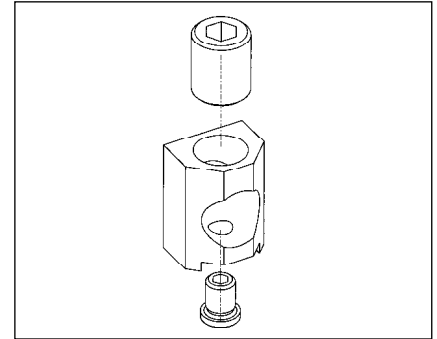
Catalogue Number



T250FJ

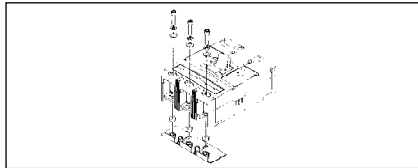


TA250FJ



TC250FJ

Endcap Kit

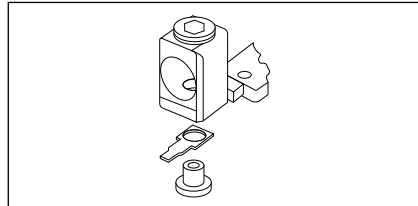


Endcap kits are used on J250-frame breaker line side to connect bus bar or similar electrical connections. Includes hardware.

Kit Catalogue Number

Number of Poles	Catalogue Number	
	Metric	Imperial
3	FJ3RTWK	FJ3RTDK
4	FJ4RTWK	FJ4RTDK

Control Wire Terminal Kit



For use with aluminium or copper terminals only.

Package of 14 — Priced Individually
Catalogue Number – FJCWTK

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or moulded case switch. (Included with breaker.)

Terminal Shields IP30

Location	Number of Poles	Catalogue Number Package of 10
Line or Load	2, 3 4	FJTS3K FJTS4K

Interphase Barriers

Package of 2	
Number of Poles	Catalogue Number
3	FJIPBK
4	FJIPBK4

① Individually packed.
② Standard line and load terminals.

Frame Size LG, 250 – 630 Amperes

Selection Guide and Ordering Information

IC Rating at 415/480 V — Complete Breaker (Includes Frame, Trip Unit, Standard Terminals & Mounting Hardware)

Ampere Rating	3-Pole		4-Pole (0%) ①		3-Pole		4-Pole (0%) ①		
	Fixed Thermal Adj. Magnetic	Adj. Thermal Adj. Magnetic	Fixed Thermal Adj. Magnetic	Adj. Thermal Adj. Magnetic	Fixed Thermal Adj. Magnetic	Adj. Thermal Adj. Magnetic	Fixed Thermal Adj. Magnetic	Adj. Thermal Adj. Magnetic	
IEC/CE/UL/CSA 35/35 (I_{CU} / I_{CS})					IEC/CE/UL/CSA 45/50 (I_{CU} / I_{CS})				
250	LGE3250FAG	LGE3250AAG	LGE4250FAG	LGE4250AAG	LGS3250FAG	LGS3250AAG	LGS4250FAG	LGS4250AAG	
300	LGE3300FAG	—	LGE4300FAG	—	LGS3300FAG	—	LGS4350FAG	—	
315	—	LGE3315AAG	—	LGE4315AAG	—	LGS3315AAG	—	LGS4315AAG	
350	LGE3350FAG	—	LGE4350FAG	—	LGS3350FAG	—	LGS4350FAG	—	
400	LGE3400FAG	LGE3400AAG	LGE4400FAG	LGE4400AAG	LGS3400FAG	LGS3400AAG	LGS4400FAG	LGS4400AAG	
500	LGE3500FAG	LGE3500AAG	LGE4500FAG	LGE4500AAG	LGS3500FAG	LGS3500AAG	LGS4500FAG	LGS4500AAG	
600	LGE3600FAG	—	LGE4600FAG	—	LGS3600FAG	—	LGS4600FAG	—	
630	—	LGE3630AAG	—	LGE4630AAG	—	LGS3630AAG	—	LGS4630AAG	
IEC/CE/UL/CSA 70/65 (I_{CU} / I_{CS})					IEC/CE/UL/CSA 100/100 (I_{CU} / I_{CS})				
250	LGH3250FAG	LGH3250AAG	LGH4250FAG	LGH4250AAG	LGC3250FAG	LGC3250AAG	LGC4250FAG	LGC4250AAG	
300	LGH3300FAG	—	LGH4300FAG	—	LGC3300FAG	—	LGC4300FAG	—	
315	—	LGH3315AAG	—	LGH4315AAG	—	LGC3315AAG	—	LGC4315AAG	
350	LGH3350FAG	—	LGH4350FAG	—	LGC3350FAG	—	LGC4350FAG	—	
400	LGH3400FAG	LGH3400AAG	LGH4400FAG	LGH4400AAG	LGC3400FAG	LGC3400AAG	LGC4400FAG	LGC4400AAG	
500	LGH3500FAG	LGH3500AAG	LGH4500FAG	LGH4500AAG	LGC3500FAG	LGC3500AAG	LGC4500FAG	LGC4500AAG	
600	LGH3600FAG	—	LGH4600FAG	—	LGC3600FAG	—	LGC4600FAG	—	
630	—	LGH3630AAG	—	LGH4630AAG	—	LGC3630AAG	—	LGC4630AAG	

Components Frame – IC Rating at 415/480 V

Ampere Rating	3-Pole	4-Pole (0%)
630	35/35	LGE3630NN
630	45/50	LGS3630NN
630	70/65	LGH3630NN
630	100/100	LGU3630NN

Trip Unit

Ampere Rating	3-Pole		4-Pole (0%) ①	
	Fixed Thermal/ Adj. Magnetic	Adj. Thermal/ Adj. Magnetic	Fixed Thermal/ Adj. Magnetic	Adj. Thermal/ Adj. Magnetic
250	LT3250FA	LT3250AA	LT4250FA	LT4250AA
300	LT3300FA	LT3315AA	LT4300FA	—
315	—	—	—	LT4315AA
350	LT3350FA	—	LT4350FA	—
400	LT3400FA	LT3415AA	LT4400FA	LT4400AA
500	LT3500FA	LT3500AA	LT4500FA	LT4500AA
600	LT3600FA	—	LT4600FA	—
630	—	LT3630AA	—	LT4630AA

Moulded Case Switches

Ampere Rating	Number of Poles	Catalogue Number
400	3	LGK3400KSG
	4	LGK7400KSG ②
630	3	LGK3630KSG
	4	LGK7630KSG ②

① Neutral protection is indicated by the fourth character: 4 = 0%, 8 = adjustable 0-60% and 9 = 0-100%.

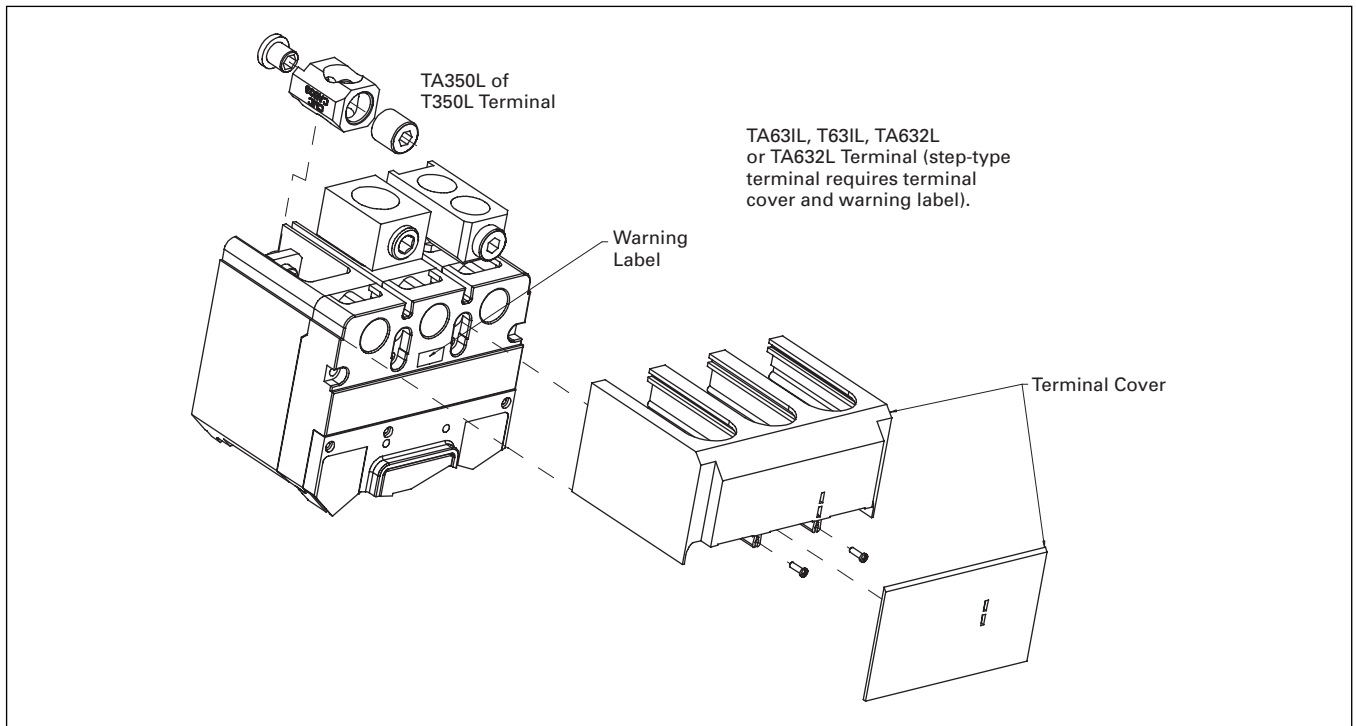
② 100% neutral protection

Frame Size LG, 250 – 630 Amperes

Selection Guide and Ordering Information

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range/ Number of Conductors	Metric Wire Range (mm ²)	Catalogue Number
630	Aluminium	Cu/Al	500 – 750 (1)	240 – 380 (1)	3TA631LK
630	Aluminium	Cu/Al	500 – 750 (1)	240 – 380 (1)	4TA631LK
	Copper	Cu	500 – 750 (1)	240 – 380 (1)	3T631LK
	Copper	Cu	500 – 750 (1)	240 – 380 (1)	4T631LK
630	Aluminium	Cu/Al	2 – 500 (2)	35 – 240 (2)	3TA632LK
630	Aluminium	Cu/Al	2 – 500 (2)	35 – 240 (2)	4TA632LK
630	Copper	Cu	2 – 500 (2)	35 – 240 (2)	3T632LK
630	Copper	Cu	2 – 500 (2)	35 – 240 (2)	4T632LK
400	Aluminium	Cu/Al	2 – 500 (1)	35 – 240 (1)	TA350LK
400	Copper	Cu	2 – 500 (1)	35 – 240 (1)	T350LK



Terminals and Terminal Cover for the LG Breaker. ①

① Contact factory for availability of terminal cover.

Frame Size NG, 400 – 1250 Amperes 50 kA at 415 Vac

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310 Electronic Trip Unit Less Rating Plugs Order as Individual Component — Catalogue Number ③				Digitrip RMS 310 Interchangeable Rating Plugs Order as Individual Component		
		L - Adjustable Long Delay Pickup (By Adjustable Rating Plug) S - Adjustable Short Delay Pickup with Fixed Short Delay Time (I ² t Response) or Adjustable Short Delay Time (Flat Response) I - Adjustable Instantaneous Pickup by Setting Short Delay Time to Instantaneous G - Adjustable Ground Fault Pickup with Adjustable Ground Fault Delay (Flat Response)				Fixed Rating Plug		Adjustable Rating Plug
		LS	LSI	LSG	LSIG	Ampere Rating	Catalogue Number	Ampere Rating Catalogue Number
Short Time Range		2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n			
Short Time Delay		–	0 – 300 ms	–	0 – 300 ms			
Ground Fault Pickup		–	–	200 – 1200 A	200 – 1200 A			
Ground Fault Delay		–	–	0 – 500 ms	0 – 500 ms			

Type NG Standard Interrupting Capacity — U_e Max. 690 Vac, 50 kA I_{cu} at 415 Vac

Rating	Poles	LS	LSI	LSG	LSIG	Rating Plugs	Adjustable Settings are:	
800	2-Pole	NGS2800T33W	NGS2800T32W	NGS2800T35W	NGS2800T36W	400	400/500/630/800 8NES800T2	
						450		
						500		
	550							
	600							
	630							
	700							
	800							
	3-Pole	NGS3800T33W	NGS3800T32W	NGS3800T35W	NGS3800T36W	400		400/500/630/800 8NES800T2
450								
500								
550								
600								
630								
700								
800								
4-Pole	NGS4800T33W	NGS4800T32W	–	–	400	400/500/630/800 8NES800T2		
			450					
			500					
550								
600								
630								
700								
800								
1250	2-Pole	NGS2125T33W	NGS2125T32W	NGS2125T35W	NGS2125T36W		600	630/800/1000/1250 A12NES1250T2 ④
						630		
						700		
						800		
	900							
	1000							
	1200							
	1250 ④							
	3-Pole	NGS3125T33W	NGS3125T32W	NGS3125T35W	NGS3125T36W	600	630/800/1000/1250 A12NES1250T2 ④	
						630		
						700		
						800		
900								
1000								
1200								
1250 ④								
4-Pole	NGS4125T33W	NGS4125T32W	–	–	600	630/800/1000/1250 A12NES1250T2 ④		
			630					
			700					
			800					
900								
1000								
1200								
1250 ④								

Moulded Case Switches ①⑤

Ampere Rating	Number of Poles	U _e Max. 690 Vac Catalogue Number	
800	3-Pole	NGS3800WK	MCS Only without Line and Load
	4-Pole	NGS4800WK	
1250	3-Pole	NGS3125WK	MCS Only without Line and Load
	4-Pole	NGS4125WK	

① For ac use only.

② Special 50°C rating available. Order by description.

③ Order rating plug and terminals separately.

④ UL label is not available above a 1200 A rating.

⑤ For 2-pole applications, use outer poles of 3-pole moulded case switch.

Frame Size NG, 400 – 1250 Amperes 70 kA at 415 Vac

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310 Electronic Trip Unit Less Rating Plugs Order as Individual Component — Catalogue Number ③				Digitrip RMS 310 Interchangeable Rating Plugs Order as Individual Component		
		L - Adjustable Long Delay Pickup (By Adjustable Rating Plug) S - Adjustable Short Delay Pickup with Fixed Short Delay Time (I ² t Response) or Adjustable Short Delay Time (Flat Response) I - Adjustable Instantaneous Pickup by Setting Short Delay Time to Instantaneous G - Adjustable Ground Fault Pickup with Adjustable Ground Fault Delay (Flat Response)	Fixed Rating Plug		Adjustable Rating Plug			
			Ampere Rating	Catalogue Number	Ampere Rating	Catalogue Number		
		LS	LSI	LSG	LSIG			
Short Time Range		2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n			
Short Time Delay		–	0 – 300 ms	–	0 – 300 ms			
Ground Fault Pickup		–	–	200 – 1200 A	200 – 1200 A			
Ground Fault Delay		–	–	0 – 500 ms	0 – 500 ms			

Type NG High Interrupting Capacity — U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac

800	2-Pole	NGH2800T33W	NGH2800T32W	NGH2800T35W	NGH2800T36W	400	8NES400T	Adjustable Settings are: 400/500/630/800 8NES800T2
						450	8NES450T	
						500	8NES500T	
	550	8NES550T						
	600	8NES600T						
	630	8NES630T						
	700	8NES700T						
	800	8NES800T						
	3-Pole	NGH3800T33W	NGH3800T32W	NGH3800T35W	NGH3800T36W	400	8NES400T	
450						8NES450T		
500						8NES500T		
550	8NES550T							
600	8NES600T							
630	8NES630T							
700	8NES700T							
800	8NES800T							
4-Pole	NGH4800T33W	NGH4800T32W	–	–	400	8NES400T		
			450	8NES450T				
			500	8NES500T				
550	8NES550T							
600	8NES600T							
630	8NES630T							
700	8NES700T							
800	8NES800T							
1250	2-Pole	NGH2125T33W	NGH2125T32W	NGH2125T35W	NGH2125T36W	600	12NES600T	630/800/1000/1250 A12NES1250T2 ④
						630	12NES630T	
						700	12NES700T	
						800	12NES800T	
	900	12NES900T						
	1000	12NES1000T						
	1200	12NES1200T						
	1250 ④	12NES1250T						
	3-Pole	NGH3125T33W	NGH3125T32W	NGH3125T35W	NGH3125T36W	600	12NES600T	
						630	12NES630T	
						700	12NES700T	
						800	12NES800T	
900	12NES900T							
1000	12NES1000T							
1200	12NES1200T							
1250 ④	12NES1250T							
4-Pole	NGH4125T33W	NGH4125T32W	–	–	600	12NES600T		
			630	12NES630T				
			700	12NES700T				
			800	12NES800T				
900	12NES900T							
1000	12NES1000T							
1200	12NES1200T							
1250 ④	12NES1250T							

① For ac use only.

② Special 50°C rating available.
Order by description.

③ Order rating plug and terminals separately.

④ UL label is not available above a 1200 A rating.

Frame Size NG, 400 – 1250 Amperes 100 kA

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310 Electronic Trip Unit Less Rating Plugs Order as Individual Component — Catalogue Number ③				Digitrip RMS 310 Interchangeable Rating Plugs Order as Individual Component		
		L - Adjustable Long Delay Pickup (By Adjustable Rating Plug) S - Adjustable Short Delay Pickup with Fixed Short Delay Time (I ² t Response) or Adjustable Short Delay Time (Flat Response) I - Adjustable Instantaneous Pickup by Setting Short Delay Time to Instantaneous G - Adjustable Ground Fault Pickup with Adjustable Ground Fault Delay (Flat Response)	Fixed Rating Plug		Adjustable Rating Plug	Ampere Rating	Catalogue Number	Ampere Rating Catalogue Number
			LS	LSI	LSG			
Short Time Range	2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n				
Short Time Delay	–	0-300 ms	–	0 – 300 ms				
Ground Fault Pickup	–	–	200 – 1200 A	200 – 1200 A				
Ground Fault Delay	–	–	0 – 500 ms	0 – 500 ms				

Type NG Very High Capacity – U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac

800	2-Pole	NGC2800T33W	NGC2800T32W	NGC2800T35W	NGC2800T36W	400 450 500 550 600 630 700 800	8NES400T 8NES450T 8NES500T 8NES550T 8NES600T 8NES630T 8NES700T 8NES800T	Adjustable Settings are: 400/500/630/800 8NES800T2	
	3-Pole	NGC3800T33W	NGC3800T32W	NGC3800T35W	NGC3800T36W	400 450 500 550 600 630 700 800	8NES400T 8NES450T 8NES500T 8NES550T 8NES600T 8NES630T 8NES700T 8NES800T		400/500/630/800 8NES800T2
	4-Pole	NGC4800T33W	NGC4800T32W	–	–	400 450 500 550 600 630 700 800	8NES400T 8NES450T 8NES500T 8NES550T 8NES600T 8NES630T 8NES700T 8NES800T		
1250	2-Pole	NGC2125T33W	NGC2125T32W	NGC2125T35W	NGC2125T36W	600 630 700 800 900 1000 1200 1250 ④	12NES600T 12NES630T 12NES700T 12NES800T 12NES900T 12NES1000T 12NES1200T 12NES1250T	630/800/1000/1250 A12NES1250T2	
	3-Pole	NGC3125T33W	NGC3125T32W	NGC3125T35W	NGC3125T36W	600 630 700 800 900 1000 1200 1250 ④	12NES600T 12NES630T 12NES700T 12NES800T 12NES900T 12NES1000T 12NES1200T 12NES1250T		630/800/1000/1250 A12NES1250T2
	4-Pole	NGC4125T33W	NGC4125T32W	–	–	600 630 700 800 900 1000 1200 1250 ④	12NES600T 12NES630T 12NES700T 12NES800T 12NES900T 12NES1000T 12NES1200T 12NES1250T		

① For ac use only.

② Special 50°C rating available.
Order by description.

③ Order rating plug and terminals separately.

④ UL label is not available above a 1200 A rating.

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310 Electronic Trip Unit and Rating Plug				Adjustable Rating Plug
		LS	LSI	LSG	LSIG	
		L - Adjustable Long Delay Pickup (By Adjustable Rating Plug) S - Adjustable Short Delay Pickup with Fixed Short Delay Time (I ² t Response) or Adjustable Short Delay Time (Flat Response) I - Adjustable Instantaneous Pickup by Setting Short Delay Time to Instantaneous G - Adjustable Ground Fault Pickup with Adjustable Ground Fault Delay (Flat Response)				
Short Time Range		2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n	–
Short Time Delay		–	0 – 300 ms	–	0 – 300 ms	–
Ground Fault Pickup		–	–	200 – 1200 A	200 – 1200 A	–
Ground Fault Delay		–	–	0 – 500 ms	0 – 500 ms	–

Type NGS Standard Interrupting Capacity – U_g Max. 690 Vac, 50 kA I_{cu} at 415 Vac

1600 ③	3-Pole	NGS316T33WP35	NGS316T32WP35	NGS316T35WP35	NGS316T36WP35	800/1000/1250/1600
	4-Pole	NGS416T33WP35	NGS416T32WP35	–	–	800/1000/1250/1600

Line and Load Terminals

N-Frame circuit breakers include Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalogue number.

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Metric Wire Range mm ²	AWG Wire Number of Conductors	Catalogue Number
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Standard Cu/Al Pressure-Type Terminals

1250 ④	Aluminium	Cu/Al	120-300	4/0-500 (3)	TA1200NB3M
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Optional Copper and Cu/Al Pressure Type Terminals

1250 ④	Copper	Copper	95-185	3/0-400 (4)	T1200NB3M
--------	--------	--------	--------	-------------	-----------

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or moulded case switch.

Imperial Thread

Number of Poles	Description	Catalogue Number
2-, 3- and 4-pole	0.3125-18 x 1.25 Inch Pan-Head Steel Screws and Lock Washers	BMH5M

Keeper Nut

Not required on N-Frame. Terminals are threaded.

Handle Extension

Included with breaker. Additional handle extensions are available.

Single Handle Extension
Catalogue Number – HEX5

Interphase Barriers

The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. Barriers are high dielectric insulating plates that are installed in the moulded slots between the terminals. (Field installation only.)

Interphase Barriers
Catalogue Number – IPB5

① For ac use only.

② Special 50°C rating available. Order by description.

③ UL label is not available for this frame size.

④ Not suitable with 1600 A frame version.

Frame Size RG, 800 – 2500 Amperes 70 kA at 415 Vac – Digitrip 310 Trip Unit

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310 Electronic Trip Unit Less Rating Plugs and Terminals (Order as Individual Component — Catalogue Number ③)				Digitrip RMS 310 Interchangeable Rating Plugs Order as Individual Component		
		L - Adjustable Long Delay Pickup (By Adjustable Rating Plug) S - Adjustable Short Delay Pickup with Fixed Short Delay Time (I ² t Response) or Adjustable Short Delay Time (Flat Response) I - Adjustable Instantaneous Pickup by Setting Short Delay Time to Instantaneous G - Adjustable Ground Fault Pickup with Adjustable Ground Fault Delay (Flat Response)				Fixed Rating Plug		Adjustable Rating Plug
						Ampere Rating	Catalogue Number	Ampere Rating Catalogue Number
		LS	LSI	LSG ④	LSIG ④			
Short Time Range		2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n			
Short Time Delay		–	0 – 300 ms	–	0 – 300 ms			
Ground Fault Pickup		–	–	200 – 1200 A	200 – 1200 A			
Ground Fault Delay		–	–	0 – 500 ms	0 – 500 ms			

Type RG with Digitrip 310 High Interrupting Capacity – U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac

1600 ①	3-Pole	RGH316T33W	RGH316T32W	RGH316T35W	RGH316T36W	800 1000 1200 1250	16RES08T 16RES10T 16RES12T 16RES125T	Adjustable Settings are: 800/1000/1200/1600 A16RES16T1
						1400 1500 1600	16RES14T 16RES15T 16RES16T	
2000		RGH320T33W	RGH320T32W	RGH320T35W	RGH320T36W	1000 1200 1250	20RES10T 20RES12T A20RES125T	1000/1200/1600/2000 A20RES20T1
						1400 1600 2000	A20RES14T A20RES16T A20RES20T	1000/1250/1600/2000 A20RES20T2
2500		RGH325T33W	RGH325T32W	RGH325T35W	RGH325T36W	1200 1250 1600 2000 2500	25RES12T 25RES125T A25RES16T A25RES20T A25RES25T	1200/1600/2000/2500 A25RES25T1
								1250/1600/2000/2500 A25RES25T2
1600 ①	4-Pole ⑤	RGH416T33W	RGH416T32W	–	–	800 1000 1200 1250	16RES08T 16RES10T 16RES12T 16RES125T	800/1000/1200/1600 A16RES16T1
						1400 1500 1600	16RES14T 16RES15T 16RES16T	800/1000/1250/1600 A16RES16T2
2000		RGH420T33W	RGH420T32W	–	–	1000 1200 1250	20RES10T 20RES12T A20RES125T	1000/1200/1600/2000 A20RES20T1
						1400 1600 2000	A20RES14T A20RES16T A20RES20T	1000/1250/1600/2000 A20RES20T2
2500		RGH425T33W	RGH425T32W	–	–	1200 1250 1600 2000 2500	25RES12T 25RES125T A25RES16T A25RES20T A25RES25T	1200/1600/2000/2500 A25RES25T1
								1250/1600/2000/2500 A25RES25T2

① For SCR application, use 2000 A frame.

② Special 50°C rating available.
Order by description.

③ Order rating plug and terminals separately.
Mounting hardware not included.

④ Ground fault equipped trip units available with remote indicating panel. Add "R" to catalogue number, i.e., "RGH316T35RW."

⑤ Unprotected left pole neutral. Add "P" to catalogue number for 100% protected left pole neutral, add "E" for 60% protected, i.e., "RGH416T33PW", "RGH416T33EW."

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310 Electronic Trip Unit Less Rating Plugs and Terminals (Order as Individual Component — Catalogue Number)				Digitrip RMS 310 Interchangeable Rating Plugs Order as Individual Component		
		L - Adjustable Long Delay Pickup (By Adjustable Rating Plug) S - Adjustable Short Delay Pickup with Fixed Short Delay Time (I ² Response) or Adjustable Short Delay Time (Flat Response) I - Adjustable Instantaneous Pickup by Setting Short Delay Time to Instantaneous G - Adjustable Ground Fault Pickup with Adjustable Ground Fault Delay (Flat Response)	Fixed Rating Plug		Adjustable Rating Plug	Ampere Rating	Catalogue Number	Ampere Rating Catalogue Number
			LS	LSI	LSG ④			
Short Time Range		2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n	2 – 8 x I _n			
Short Time Delay		–	0 – 300 ms	–	0 – 300 ms			
Ground Fault Pickup		–	–	200 – 1200 A	200 – 1200 A			
Ground Fault Delay		–	–	0 – 500 ms	0 – 500 ms			

Type RG with Digitrip 310 Very High Interrupting Capacity – U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac

Maximum Continuous Ampere Rating at 40°C ①	Number of Poles	LS	LSI	LSG ④	LSIG ④	Fixed Rating Plug	Adjustable Rating Plug	Adjustable Settings are:
1600 ①	3-Pole	RGC316T33W	RGC316T32W	RGC316T35W	RGC316T36W	800 1000 1200 1250	16RES08T 16RES10T 16RES12T 16RES125T	800/1000/1200/1600 A16RES16T1
						1400 1500 1600	16RES14T 16RES15T 16RES16T	800/1000/1250/1600 A16RES16T2
2000	3-Pole	RGC320T33W	RGC320T32W	RGC320T35W	RGC320T36W	1000 1200 1250	20RES10T 20RES12T A20RES125T	1000/1200/1600/2000 A20RES20T1
						1400 1600 2000	A20RES14T A20RES16T A20RES20T	1000/1250/1600/2000 A20RES20T2
1600 ①	4-Pole ⑤	RGC416T33W	RGC416T32W	–	–	800 1000 1200 1250	16RES08T 16RES10T 16RES12T 16RES125T	800/1000/1200/1600 A16RES16T1
						1400 1500 1600	16RES14T 16RES15T 16RES16T	800/1000/1250/1600 A16RES16T2
2000	4-Pole ⑤	RGC420T33W	RGC420T32W	–	–	1000 1200 1250	20RES10T 20RES12T A20RES125T	1000/1200/1600/2000 A20RES20T1
						1400 1600 2000	A20RES14T A20RES16T A20RES20T	1000/1250/1600/2000 A20RES20T2

Moulded Case Switches

Ampere Rating	Number of Poles	Catalogue Number
1600 2000	3-Pole	RGH316WK RGH320WK
1600 2000	3-Pole	RGH316WK RGH320WK

① For SCR application, use 2000A frame.
 ② Special 50°C rating available. Order by description.
 ③ Order rating plug and terminals separately. Mounting hardware not included.

④ Ground fault equipped trip units available with remote indicating panel. Add “R” to catalogue number, i.e., “RGH316T35RW.”
 ⑤ Unprotected left pole neutral. Add “P” to catalogue number for 100% protected left pole neutral, add “E” for 60% protected, i.e., “RGH416T33PW,” “RGH416T33EW.”

Frame Size RG, 800 – 1250 Amperes 70 kA at 415 Vac & 100 kA at 415 Vac – Digitrip 610 & 910 Trip Units

Selection Guide and Ordering Information

Maximum Continuous Ampere Rating at 40°C ①	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 610 and 910 Electronic Trip Unit Less Rating Plugs Order as Individual Component — Catalogue Number ②					Digitrip RMS Interchangeable Rating Plug Order as Individual Component	
		L	S	I	G	LS	Amperage Rating	Catalogue Number
		L - Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S - Adjustable Short Delay Pickup with Adjustable Short Delay Time (I_r^2 or Flat Response) I - Adjustable Instantaneous Pickup G - Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I_r^2 or Flat Response)					Fixed Rating Plug	
		LI	LS	LSI	LIG	LSG	LSIG	
Long Delay Pickup		0.5 – 1.0 x I_n	0.5 – .0 x I_n	0.5 – 1.0 x I_n	0.5 – 1.0 x I_n	0.5 – 1.0 x I_n	0.5 – 1.0 x I_n	
Long Delay Time		2 – 24 Seconds	2 – 24 Seconds	2 – 24 Seconds	2 – 24 Seconds	2 – 24 Seconds	2 – 24 Seconds	
Short Time Range		2 – 6 x I_r	2 – 6 x I_r	2 – 6 x I_r	2 – 6 x I_r	2 – 6 x I_r	2 – 6 x I_r	
Short Time Delay		–	100 – 500 ms	100 – 500 ms	–	100 – 500 ms	100 – 500 ms	
Instantaneous		2 – 6 x M1 & M2	–	2 – 6 x M1 & M2	2 – 6 x M1 & M2	–	2 – 6 x M1 & M2	
Ground Fault Pickup		–	–	–	0.25 – 1.0 x I_n ③	0.25 – 1.0 x I_n ③	0.25 – 1.0 x I_n ③	
Ground Fault Delay		–	–	–	100 – 500 ms	100 – 500 ms	100 – 500 ms	

Type RG with Digitrip 610 High Interrupting Capacity — U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac

Rating	Poles	LI	LS	LSI	LIG	LSG	LSIG	Amperage Rating	Catalogue Number
1600	3-Pole	RGH316T61W	RGH316T63W	RGH316T62W	RGH316T64W	RGH316T65W	RGH316T66W	800 1000 1200 1250 1600	RP6R16A080 RP6R16A100 RP6R16A120 RP6R16A125 RP6R16A160
2000		RGH320T61W	RGH320T63W	RGH320T62W	RGH320T64W	RGH320T65W	RGH320T66W	1000 1200 1250 1600 2000	RP6R20A100 RP6R20A120 RP6R20A125 RP6R20A160 RP6R20A200
2500		RGH325T61W	RGH325T63W	RGH325T62W	RGH325T64W	RGH325T65W	RGH325T66W	1600 2000 2500	RP6R25A160 RP6R25A200 RP6R25A250

Type RG with Digitrip 610 Very High Interrupting Capacity — U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac

Rating	Poles	LI	LS	LSI	LIG	LSG	LSIG	Amperage Rating	Catalogue Number
1600	3-Pole	RGC316T61W	RGC316T63W	RGC316T62W	RGC316T64W	RGC316T65W	RGC316T66W	800 1000 1200 1250 1600	RP6R16A080 RP6R16A100 RP6R16A120 RP6R16A125 RP6R16A160
2000		RGC320T61W	RGC320T63W	RGC320T62W	RGC320T64W	RGC320T65W	RGC320T66W	1000 1200 1250 1600 2000	RP6R20A100 RP6R20A120 RP6R20A125 RP6R20A160 RP6R20A200

Type RG with Digitrip 910 High Interrupting Capacity — U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac

Rating	Poles	LI	LS	LSI	LIG	LSG	LSIG	Amperage Rating	Catalogue Number
1600	3-Pole	RGH316T91W	RGH316T93W	RGH316T92W	RGH316T94W	RGH316T95W	RGH316T96W	800 1000 1200 1250 1600	RP6R16A080 RP6R16A100 RP6R16A120 RP6R16A125 RP6R16A160
2000		RGH320T91W	RGH320T93W	RGH320T92W	RGH320T94W	RGH320T95W	RGH320T96W	1000 1200 1250 1600 2000	RP6R20A100 RP6R20A120 RP6R20A125 RP6R20A160 RP6R20A200
2500		RGH325T91W	RGH325T93W	RGH325T92W	RGH325T94W	RGH325T95W	RGH325T96W	1600 2000 2500	RP6R25A160 RP6R25A200 RP6R25A250

Type RG with Digitrip 910 Very High Interrupting Capacity — U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac

Rating	Poles	LI	LS	LSI	LIG	LSG	LSIG	Amperage Rating	Catalogue Number
1600	3-Pole	RGC316T91W	RGC316T93W	RGC316T92W	RGC316T94W	RGC316T95W	RGC316T96W	800 1000 1200 1250 1600	RP6R16A080 RP6R16A100 RP6R16A120 RP6R16A125 RP6R16A160
2000		RGC320T91W	RGC320T93W	RGC320T92W	RGC320T94W	RGC320T95W	RGC320T96W	1000 1200 1250 1600 2000	RP6R20A100 RP6R20A120 RP6R20A125 RP6R20A160 RP6R20A200

① Special 50°C rating available.
Order by description.

② Order rating plug and terminals separately.
Mounting hardware not included.

③ Not to exceed 1200 A ground fault pick-up.

Frame Size RG, 800 – 2500 Amperes

Selection Guide and Ordering Information

Line and Load Terminals

R-Frame circuit breakers have Cu/Al terminals as standard and copper only terminals as an option. Specify if factory installation is required.

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Hardware	AWG/kcmil Wire Range/Number of Conductors	Metric Wire Range mm ²	Catalogue Number
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Wire Terminals

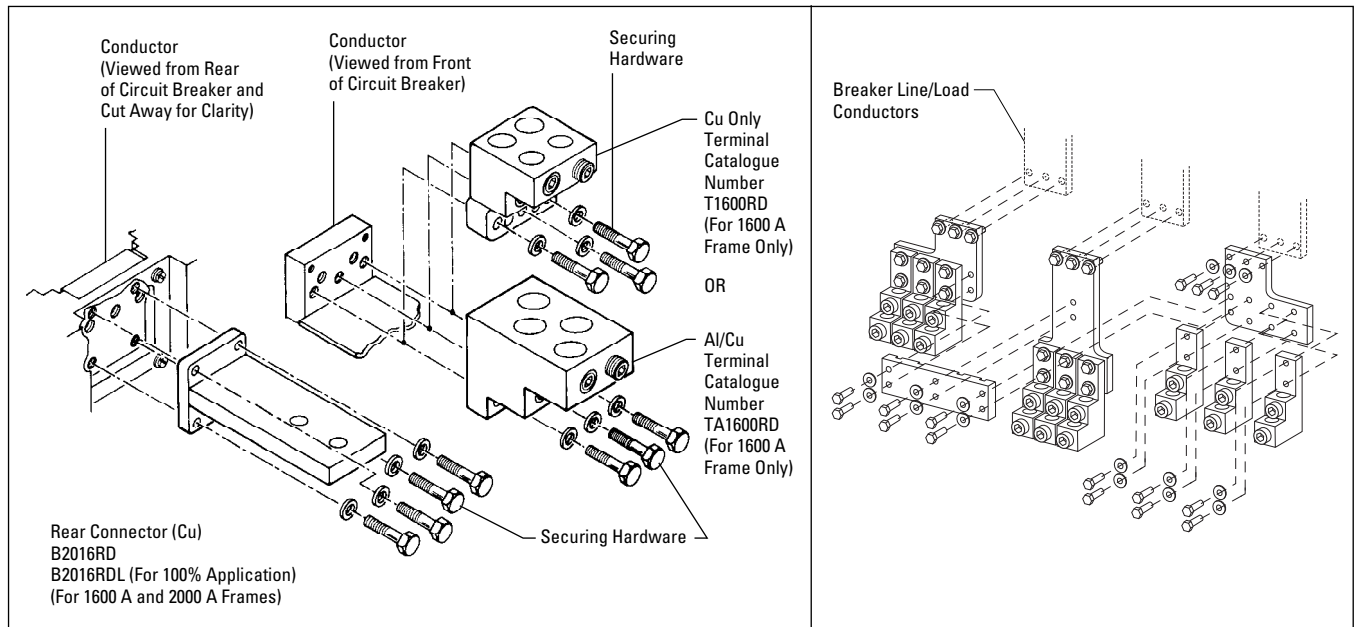
1600	Aluminium	Cu/Al	English	500 – 1000 (4)	300 – 500	TA1600RD
1600	Copper	Cu	English	1 – 600 (4)	50 – 300	T1600RD
2000	Aluminium	Cu/Al	English	2 – 600 (6)	35 – 300	TA2000RD

Rear Connectors

2000	Copper	–	English	–	–	B2016RD
2000	Copper	–	English	–	–	B2016RDL
2500	Copper	–	English	–	–	B2500RD

RD Rear Connector Exploded View

TA2000RD ①



Base Mounting Hardware

Supplied by customer.

Handle Extension

Included with breaker. Additional handle extensions are available.

Single Handle Extension
Catalogue Number — HEX6

① Catalogue number includes bus connection, terminals and hardware for either line side or load side of 3-pole breaker.

Motor Circuit Protectors

Selection Guide and Ordering Information

EG Frame – 600Y/347 Vac Maximum, 250 Vdc Maximum

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes ①	MCP Trip Setting ②	MCP Catalogue Number
3	A	.69 – .91	9	HMCP E003A0C
	B	1.1 – 1.3	15	
	C	1.6 – 1.7	21	
	D	2.0 – 2.2	27	
	E	2.3 – 2.5	30	
	F	– 2.6	33	
7	A	1.5 – 2.0	21	HMCP E003A0C
	B	2.6 – 3.1	35	
	C	3.7 – 3.9	49	
	D	4.8 – 5.2	63	
	E	5.3 – 5.7	70	
	F	5.8 – 6.1	77	
15	A	3.4 – 4.5	45	HMCP E015E0C
	B	5.7 – 6.8	75	
	C	8.0 – 9.1	100	
	D	10.4 – 11.4	135	
	E	11.5 – 12.6	150	
	F	12.7 – 13.0	165	
30	A	3.9 – 9.1	90	HMCP E030H1C
	B	11.5 – 13.7	150	
	C	16.1 – 18.3	210	
	D	20.7 – 22.9	270	
	E	23.0 – 25.2	300	
	F	25.3 – 26.1	330	
50	A	11.5 – 15.2	150	HMCP E050K2C
	B	19.2 – 22.9	250	
	C	26.9 – 30.6	350	
	D	34.6 – 38.3	450	
	E	38.4 – 42.1	500	
	F	42.2 – 43.5	550	
70	A	16.1 – 30.6	210	HMCP E070M2C
	B	26.9 – 32.2	350	
	C	37.6 – 42.9	490	
	D	48.4 – 53.7	630	
	E	53.8 – 59.1	700	
	F	59.2 – 60.9	770	
100	A	23.0 – 30.6	300	HMCP E100R3C
	B	38.4 – 46.0	500	
	C	53.8 – 61.4	700	
	D	69.2 – 76.8	900	
	E	76.9 – 84.5	1000	
	F	84.6 – 87.0	1100	
100	A	38.4 – 46.0	500	HMCP E100T3C
	B	53.8 – 61.4	700	
	C	69.2 – 76.8	900	
	D	84.6 – 76.8	1100	
	E	③	1300	
	F	③	1500	

JD Frame – 600 Vac Maximum, 250 Vdc Maximum

Continuous Amperes	MCP Trip Range (Amperes)	MCP Catalogue Number
250	500 – 1000	HMCPJ250D5L
	625 – 1250	HMCPJ250F5L
	750 – 1500	HMCPJ250G5L
	875 – 1750	HMCPJ250J5L
	1000 – 2000	HMCPJ250K5L
	1125 – 2250	HMCPJ250L5L
	1250 – 2500	HMCPJ250W5L

LG Frame – 600 Vac Maximum, 250 Vdc Maximum ④

Continuous Amperes	MCP Trip Range (Amperes)	MCP Catalogue Number
630	1125 – 2250	HMCP L600L
	1500 – 3000	HMCP L600N
	1750 – 3500	HMCP L600R
	2000 – 4000	HMCP L600X
	2250 – 4500	HMCP L600Y
	2500 – 5000	HMCP L600P
	3000 – 6000	HMCP L600M

NG Frame – 600 Vac Maximum ④

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes	MCP Trip Setting	MCP Catalogue Number
800	A	123.1 – 184.5	1600	HMCP800X7W
	B	184.6 – 246.1	2400	
	C	246.2 – 307.6	3200	
	D	307.2 – 369.1	4000	
	E	369.2 – 430.7	4800	
	F	430.8 – 492.2	5600	
	G	492.3 – 553.7	6400	
1200	A	184.6 – 276.8	2400	HMCP12Y8W
	B	276.9 – 369.1	3600	
	C	369.2 – 461.4	4800	
	D	461.5 – 553.7	6000	
	E	553.8 – 646.1	7200	
	F	646.2 – 738.4	8400	
	G	738.5 – 830.7	9600	

① Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For dc applications, actual trip levels are approximately 40% higher than values shown.

③ Settings above 10XLn are for special applications. Where the ampere rating of the disconnecting means can not be less than 115% of the motor full load ampere rating.

④ Equipped with an electronic trip device.

Earth Leakage Modules

Earth Leakage Modules



Earth Leakage Breakers

The Cutler-Hammer business offers 3- and 4-pole earth leakage protection for EG, JG and LG breakers by easily attaching our Earth Leakage Module. The module does not restrict the use of other breaker accessories. The EG version is side mounted for circuits up to 125 amperes, while the JG and LG modules are both bottom mounted for circuits up to 160 and 250 amperes (JG), or 400 and 630 amperes for the LG.

The module is completely self-contained since the current sensor, relay and power supply are located inside the product. There is a full range of current pickup settings selectable from (0.030 – 10.0) amperes. Time delays are also selectable from (Instantaneous – 1.0) seconds, for 0.10 ampere settings and above. A current pickup setting of 0.030 amperes defaults to an Instantaneous time setting regardless of the time dial's position. Two alarm contacts come as standard: a 50% pretrip and a 100% after trip, both based only on earth leakage current levels.

Product Selection

**EG Frame Earth Leakage Modules
(Side Mounted, 230 – 415 Vac, 50/60 Hz)**

Amperes	Poles	Catalogue Number
125	3	ELESE3125W
125	4	ELESE4125W

**JG Frame Earth Leakage Modules
(Bottom Mounted, 230 – 415 Vac, 50/60 Hz)**

Amperes	Poles	Catalogue Number
160	3	ELJBE3160W
160	4	ELJBE4160W
250	3	ELJBE3250W
250	4	ELJBE4250W

**LG Frame Earth Leakage Modules ①
(Bottom Mounted, 230 – 415 Vac, 50/60 Hz)**

Amperes	Poles	Catalogue Number
400	3	ELLBE3400W
400	4	ELLBE4400W
630	3	ELLBE3630W
630	4	ELLBE4630W

① Check factory for availability.

Special Features and Accessories

Selection Guide and Ordering Information

Remote Controlled Operating Mechanisms

Cutler-Hammer Circuit Breakers (except the EG-Frame) can be equipped with electrical operating mechanisms for remote in-service closing and opening.

Operators are always supplied with a locking device for padlocks. This device can be used for electrical and mechanical blocking of the operating mechanism. All remote operating mechanisms are equipped with a manual actuator for local operation.

Alarm Lockout

The alarm switches operate when the circuit breaker is tripped by a short circuit or overcurrent, but also when it is tripped by a shunt trip or undervoltage release.

Auxiliary Switches

Auxiliary switches are used for signalling and control purposes. The various functions of the auxiliary switches (changeover) are shown in the top table to the right.

Shunt Trips

The shunt trip is used for remote tripping.

The coil of the shunt trip is rated only for short-time operation.

It is not permissible with the circuit breaker open to apply a continuous opening command to the shunt trip in order to prevent the breaker from closing.

This means that interlocking circuits with continuous commands may not be set up with shunt trips.

Undervoltage Releases

The circuit breaker cannot be closed until the undervoltage release is energized. If the release is not energized, the circuit breaker can only perform an idle switching operation.

Possible Equipment of EG-, JG- and LG-Frame Circuit Breakers with Auxiliary and Alarm Switches

3-Pole Circuit Breakers		left		right	
					1 AUX
					2 AUX
					1 AS
					1 AS + 1 AUX
2 AS					1 AUX
1 AS					2 AUX
2 AS					2 AUX
—					4 AUX 4 AUX 4 AUX ●
—					●

4-Pole Circuit Breakers		left		right	
					1 AUX
					2 AUX
					1 AS
					1 AS 1 AUX
2 AS					1 AUX
1 AS					2 AUX
2 AS					2 AUX
—					4 AUX 4 AUX 4 AUX ●
—					●

= Shunt Trip or Undervoltage Release or DI Module (if Built-In)

AUX = Auxiliary Switch

AS = Alarm Switch

● = For R-Frame Circuit Breakers Only

*EG and JG Auxiliary Switch or Alarm Switch in the Right Pole.
 EG and JG Shunt Trip or UVR in the Left Pole.*

Frequent idle switching actions should be avoided as they shorten the endurance of the circuit breaker.

Contact making by the auxiliary and alarm switches as a function of the switching position of the circuit breaker

Position of the Toggle Handle Drive (Equivalently Applicable for Rotary Drives)	Position of the Auxiliary Switch	Position of the Alarm Switch

Special Features and Accessories

Selection Guide and Ordering Information

Special Calibration

Special non-UL listed calibrations are available for certain ambient temperatures other than 40°C and for frequencies other than 50/60 Hz or dc. Reduced interrupting ratings will apply for 400 Hz applications.

50°C Calibration ①

Add suffix “V” to catalogue number for complete breaker when ordering listed ampere ratings for breakers to be used in 50°C ambients.

Contact the Cutler-Hammer business for availability.

Moisture-Fungus Treatment

All Cutler-Hammer Circuit Breaker cases are moulded from glass-poly-ester which does not support the growth of fungus. Any parts which are susceptible to the growth of fungus will require special treatment.

Order by description.

Accessory	Frame				
	EG	JG	LG	NG	RG
Special Calibration	✓	✓	✓	✓	✓
Moisture-Fungus Treatment	✓	✓	✓	✓	✓

Accessory	Fit Type	Frame				
		E125	J250	L630	N-	R-

External Accessory Catalogue Numbers

Non-Padlockable Handle Block	Field Fitted	EFHB	–	–	LKD4	–
Padlockable Handle Block	Field Fitted	–	–	–	–	–
	Field Fitted	EFPHBOFF	FJPHBOFF	–	–	HLK6
Padlockable Handle Lock Hasp	Field Fitted	EFPHLOFF	FJPHLOFF	–	PLK5	–
Cylinder Lock	Factory Fitted	Order by Description				
Key Interlock Kit (Provision Only)	Field Fitted	–	KYKFJ	–	KYK4	KYK6
Slide Bar Interlock – Requires 2 Breakers	Field Fitted	68C6304G01	FJSBI	–	SBK5	–
Walking Beam Interlock – Requires 2 Breakers	Factory Fitted	–	FJWBI	–	–	–
Electrical Operator	120 Vac	69D6430G03	–	–	E0P5T07	E0P6T08
	240 Vac	69D6430G03	–	–	E0P5T11	E0P6T11
	120 Vdc	–	–	–	–	–
	24 Vdc	69D6430G01	EOPFJ24D	–	E0P5T21K	E0P6T19K
	48 Vdc	69D6430G02	EOPFJ48D	–	E0P5T22	E0P6T21
	125 Vdc	69D6430G03	EOPFJ240C	–	E0P5T26	–
Plug-In Adapters ②	Field Fitted	✓	✓	✓	✓	–
Rear Connecting Studs ②	Field Fitted	✓	✓	✓	✓	–
Handle Mechanism – Field Fitted Only ②	Flex Shaft	✓	✓	✓	✓	✓
	Rotary	✓	✓	✓	✓	✓
	Slide Plate	–	–	–	✓	✓
	Direct	✓	✓	✓	✓	✓

Test Kit







Electronic Portable Test Kit (Digitrip 310 Only)	–	②	②	STK2	STK2
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① K-, L-, N- and R-Frame breakers equipped with electronic trip units can operate reliably in ambient temperatures of 50°C.

② Contact the Cutler-Hammer business for catalogue numbers.

Accessories

Selection Guide and Ordering Information

Accessory	Pole Location	Frame			
		EG, JG & LG	NG	RG	
Field Fit Kit Catalogue Numbers					
Alarm Lockout 	Make/Break	Left	–	A1L5LPK	–
		Right	ALM1M1BEPK	A1L5RPK	A1L6RPK
	2 Make/2 Break	Left	–	A2L5LPK	–
		Right	ALM2M2BEPK	A2L5RPK	A2L6RPK
Auxiliary Switch 	1A, 1B	Left	–	A1X5LPK	–
		Right	AUX1A1BPK	A1X5RPK	–
	2A, 2B	Left	–	A2X5LPK	–
		Right	AUX2A2BPK	A2X5RPK	A2X6RPK
	3A, 3B	Left	–	A3X5LPK	–
		Right	–	A3X5RPK	–
Auxiliary Switch /Alarm Lockout 	Left	–	AA115LPK	–	
	Right	AUXALRMEPK	AA115RPK	–	
Shunt Trip – Standard ① 	120 Vac	Left	SNT120CPK	SNT5LP11K	–
		Right	–	–	SNT6P11K
	240 Vac	Left	SNT480APK	SNT5LP11K	–
		Right	–	–	SNT6P11K
	24 Vdc	Left	SNT060CPK	SNT5LP03K	–
		Right	–	–	SNT6P03K
	48 Vdc	Left	SNT060CPK	SNT5LP23K	–
		Right	–	–	SNT6P23K
Shunt Trip – Low Energy 	Left	–	LST5LPK	–	
	Right	–	–	LST6RPK	
Undervoltage Release Mechanism ① 	120 Vac	Left	UVR120APK	UVH5LP08K	–
		Right	–	–	UVH6RP08K
	208 – 240 Vac	Left	UVR480APK	UVH5LP11K	–
		Right	–	–	UVH6RP11K
	24 Vdc, Vac	Left	UVR024CPK	UVH5LP21K	–
		Right	–	–	UVH6RP21K
	48 Vdc	Left	UVR048DPK	UVH5LP23K	–
		Right	–	–	UVH6RP23K
	12 Vdc, Vac	Left	UVR012CPK	–	–
		Right	–	–	–
	48 Vac	Left	UVR048APK	–	–
		Right	–	–	–
	120 Vdc	Left	UVR125DPK	–	–
		Right	–	–	–
	220 – 250 Vdc	Left	UVR250DPK	–	–
		Right	–	–	–
	380 – 500 Vac	Left	UVR480APK	–	–
		Right	–	–	–
525 – 600 Vac	Left	UVR600APK	–	–	
	Right	–	–	–	

① Shunt trip and undervoltage release can only be mounted in left pole of K- and L-Frame breakers equipped with electronic trip units.

Handle Mechanisms

Selection Guide and Ordering Information

Handle Mechanisms Overview

Handle mechanisms are used to operate moulded case circuit breakers, moulded case switches and motor circuit protectors. They are available in three basic configurations — Flange Mounted, Through-the-Door and Direct (Close-Coupled) — providing safe, dependable operation and ease of installation.

Flange Mounted

- Flex Shaft

Through-the-Door

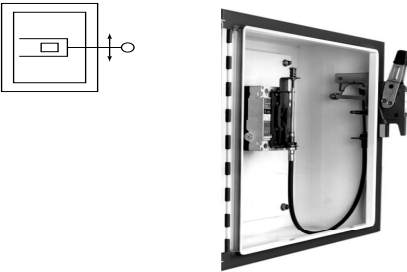
- Universal Rotary

Direct (Close Coupled)

- Universal Direct
- Euro IEC

Handle mechanisms are typically used on enclosed circuit breakers, control panels and motor control centres in many different applications. The Cutler-Hammer business has a handle mechanism for virtually any need.

Flange Mounted Handle Mechanisms



The Flex Shaft™

Flange Mounted handle mechanisms mount on the flange of an enclosure door. The Flex Shaft is an extra heavy-duty mechanism that includes a flexible shaft in various lengths, 0.9 meters (3 feet) through 3 meters (10 feet) for use with various size enclosures.

The Flex Shaft handle will accept up to three padlock shackles, each with a maximum diameter of 9.5 mm (3/8 inch). Can be used with NEMA 1, 3R and 12 fabricated enclosures. An optional handle is available for Flex Shaft that is suitable for use with NEMA® 4 and 4X environments.

Flex Shaft comes preset from the factory, requiring only minor field adjustments on installation, which takes about 10 minutes — a significant time savings compared to installation of other types of flange handle mechanisms. The Flex Shaft mechanism also takes up less interior enclosure space than competi-

tive designs and the handle fits standard flange cutouts. Flex Shaft handle can be remotely mounted from breaker, where an operator can use it by “funneling” the cable through conduit.

Flex Shaft is UL listed under File E64893 and meets CSA requirements.

Flex Shaft Ordering Information

Breaker Frame	Flexible Shaft Length Meters (Feet)							
	Catalogue Number							
	.91m (3)	1.22m (4)	1.25m(5)	1.83m (6)	2.13m (7)	2.44m (8)	2.74m (9)	3.05m (10)
EG	EHMFS03I	EHMFS04I	EHMFS05I	EHMFS06I	EHMFS07I	EHMFS08I	EHMFS09	EHMFS10
JG	JHMFS03I	JHMFS04I	JHMFS05I	JHMFS06I	JHMFS07I	JHMFS08I	JHMFS09	JHMFS10
LG	N/A	—	—	—	N/A	N/A	N/A	—
NG	N/A	F5S04CI	F5S05CI	F5S06CI	N/A	N/A	N/A	F5S10C
RG	N/A	F6S04CI	F6S05CI	F6S06CI	N/A	N/A	N/A	N/A

Note: Type 4/4X handle mechanisms are available. Add Suffix X before the I to complete Catalogue Number.

Add Suffix L to complete Catalogue Number for 152.4 mm (6-inch) handle.

Original narrow handle design (No C Suffix) is available. Remove C from Catalogue Number.

Note: When selecting the length of shaft, ensure minimum bending radius of 101.6 mm (4 inches) is maintained to operate properly.

The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

Flex Shaft Accessories (E- through R-Frame)

Standard Door Hardware (Required Adapter Kit)

Latch	Panel Height mm (Inches)	Catalogue Number
2 Point	Up to 762 (30)	DH1R
2 Point	Up to 1016 (40)	DH2R
3 Point	Over 1016 (40)	DH3R

Door Hardware Adapter Kit (Required on Standard Door Hardware)

Catalogue Number — AMTDHA

Flex Shaft Replacement Door Hardware Kits

Breaker Frame	Flexible Shaft	Catalogue Number
JG	5108A56G02 5108A56G16 5108A56G19	LH/RH LH/RH LH/RH

Door Hardware for Hoffman A – 25 Enclosure

Latch	Panel Height mm (Inches)	Catalogue Number
2 Point	Up to 1016 (40)	HDH-2R
3 Point	Over 1016 (40)	HDH-3R

Flange Mounted Instruction Leaflets

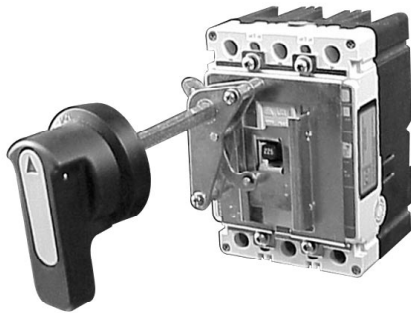
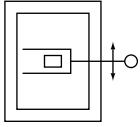
Breaker Frame	Instruction Leaflet/FRED Number
EG	29C265
JG	29C518
JG	15605
LG	—
NG	15606
RG	15606

① Kit consists of special door hardware and door interlock pin. Available for right-hand flange mounting only.

Handle Mechanisms

Selection Guide and Ordering Information

Through-the-Door Handle Mechanisms



Rotary

The Cutler-Hammer Rotary is suitable for use with NEMA 1 and 12 enclosure types. All rotary handle mechanisms include a handle "Lock Off," to prevent turning the breaker ON while in the OFF position. All Rotary handles indicate ON/OFF/Tripped/Reset positions, however, Universal Rotary has the added feature of international markings for ON (I) and OFF (O). Cutler-Hammer Rotary handle is metal, Universal Rotary is made of moulded material. Cutler-Hammer Rotary handle is black and Universal Rotary is available in black or yellow/red.

Universal Rotary Ordering Information

Shaft Length in mm (Inches)	Handle Colour	Complete Catalogue Number ①	Cutler-Hammer Rotary Complete Catalogue Number ①	
			IEC IP65	IEC IP66

EG-Frame

152.4 (6)	Black	EHMVD06B	–	–
304.8 (12)	Black	EHMVD12B	–	–
152.4 (6)	Red	EHMVD06R	–	–
304.8 (12)	Red	EHMVD12R	–	–

JG-Frame

152.4 (6)	Black	FJHMVD06B	–	–
304.8 (12)	Black	FJHMVD12B	–	–
152.4 (6)	Red	FJHMVD06R	–	–
304.8 (12)	Red	FJHMVD12R	–	–

LG-Frame

152.4 (6)	Black	–	–	–
304.8 (12)	Black	–	–	–
152.4 (6)	Red	–	–	–
304.8 (12)	Red	–	–	–

NG-Frame

152.4 (6)	Black	HMVD15HB + HMCC5W	WHM5B06	WHM5B06X
304.8 (12)	Red	HMVD15HR + HMCC5W	WHM5R12	WHM5R12X

RG-Frame

152.4 (6)	Black	HMVD15HB + HMCC6W	WHM5B06	WHM5B06X
304.8 (12)	Red	HMVD15HR + HMCC6W	WHM5R12	WHM5R12X

Through-the-Door Instruction Leaflets/ FRED Number

Breaker Frame	Cutler-Hammer Rotary	Universal Rotary
EG	–	29C517
JG	–	29C519
LG	–	–
NG	15602	–

① Complete catalogue number includes handle, mechanism, shaft and mounting hardware.

Handle Mechanisms

Selection Guide and Ordering Information

Direct (Close-Coupled) Handle Mechanisms



Universal Direct



Euro IEC Direct

Direct (Close-Coupled) Handle Mechanisms mount directly to the circuit breaker. They are used in shallow enclosures where the standard variable depth Through-the-Door type mechanism is not practical or cannot be used. They are typically for applications where high volume, standardized enclosures are being fabricated.

The Universal Direct handle mechanism is designed exclusively for the new Cutler-Hammer EG and JG circuit breakers. It is available as standard with a door interlock to prevent opening the enclosure while the circuit breaker is in the ON position. It is also available without a door interlock.

The Euro IEC Direct handle mechanism can be used on E- through R-Frames.

The Universal Direct handle mechanism is UL 489 listed, IEC 60947-1/2 and meets CSA requirements. The Euro IEC Direct handle mechanism is IEC-240-1.

Universal Direct Ordering Information

Frame	White Handle Colour		Red Handle Colour
	with Interlock	without Interlock	without Interlock
	Catalogue Number		
EG	EHMCCBI	EHMCCB	EHMCCR
JG	JHMCCBI	JHMCCB	JHMCCR

Euro IEC Direct Ordering Information

Frame	Catalogue Number	
	Black Handle	Red Handle
LG	–	–
NG	HMCC5B	HMCC5R
RG	HMCC6B	HMCC6R

Direct (Close-Coupled) Instruction Leaflet

Frame	Instruction Leaflet/FRED Number	
	Universal Direct	Euro IEC Direct
E	29C255	–
J	29C256	–
L	–	–
N	–	29C290
R	–	29C291

Frame Sizes EG through JG

Time-Current Curves

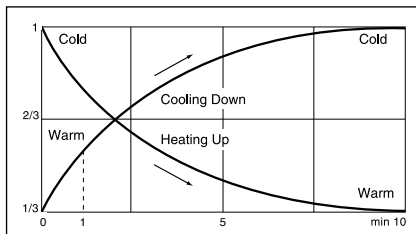
Tripping Characteristics

The operating values specified for the inverse time overcurrent releases (thermal overload releases, "a" releases) are mean values of the scatter bands of all setting ranges from the cold state and with uniform current loading of the conducting paths.

The tripping characteristics of the instantaneous (electromagnetic) short circuit releases ("n" releases) are based on the rated phase current I_n which in the case of circuit breakers with adjustable thermal overload releases is also the upper value of the setting range. With a lower setting current, a correspondingly higher multiple is obtained for the operating current of the "n" release.

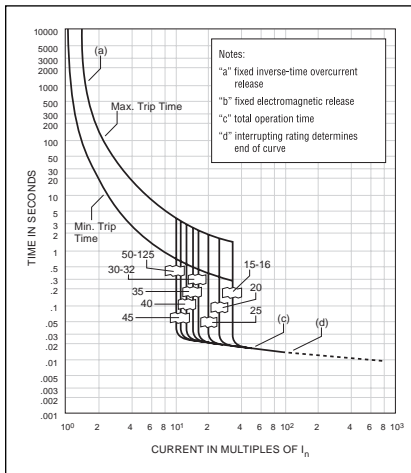
Individual time-current curves for JG- and LG-Frame Digitrip 310 Electronic Trips are available upon request.

Tripping Time Characteristics (Thermal Memory)



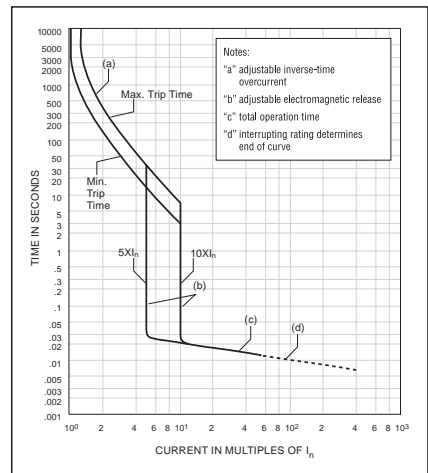
Type EG

Tripping characteristics of EG circuit breakers for plant protection, $I_{cu} = 18/25/40/70$ kA, "n" release fixed setting = 500 – 1300 for breaker 16 – 63 A; 1300 – 1800 for breaker 70 – 125 A.



Type JG

Tripping characteristics of JG circuit breakers for plant protection, $I_{cu} = 25/40/70$ kA, "n" release adjustable.

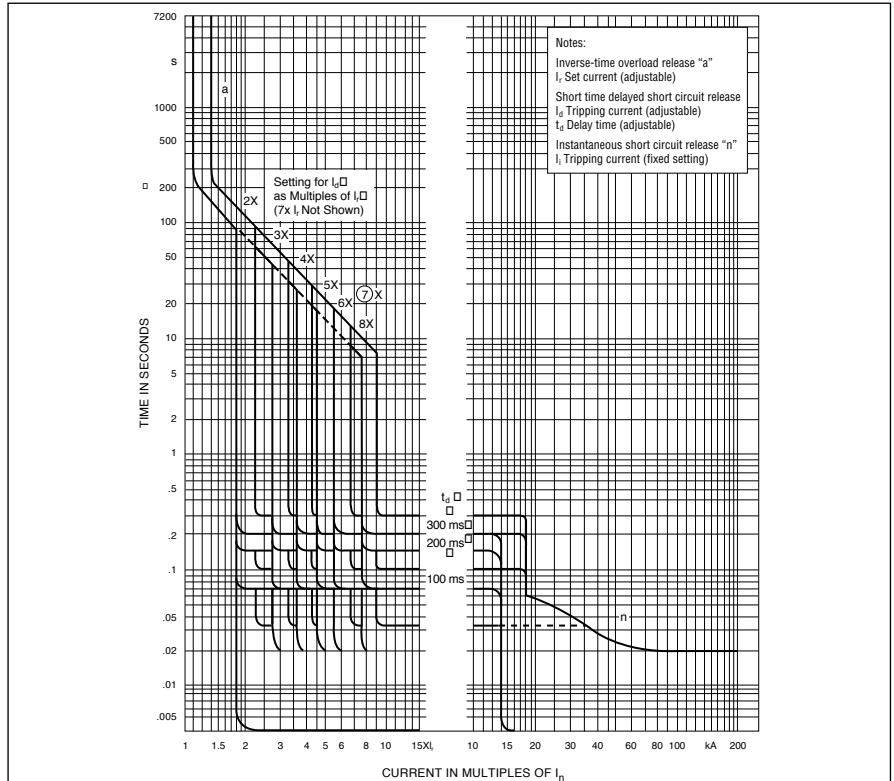


Frame Sizes NG and RG

Time-Current Curves

Type NG

Tripping characteristics for NW circuit breakers, I_{cu} 50/70/100 kA, with solid-state overcurrent release.

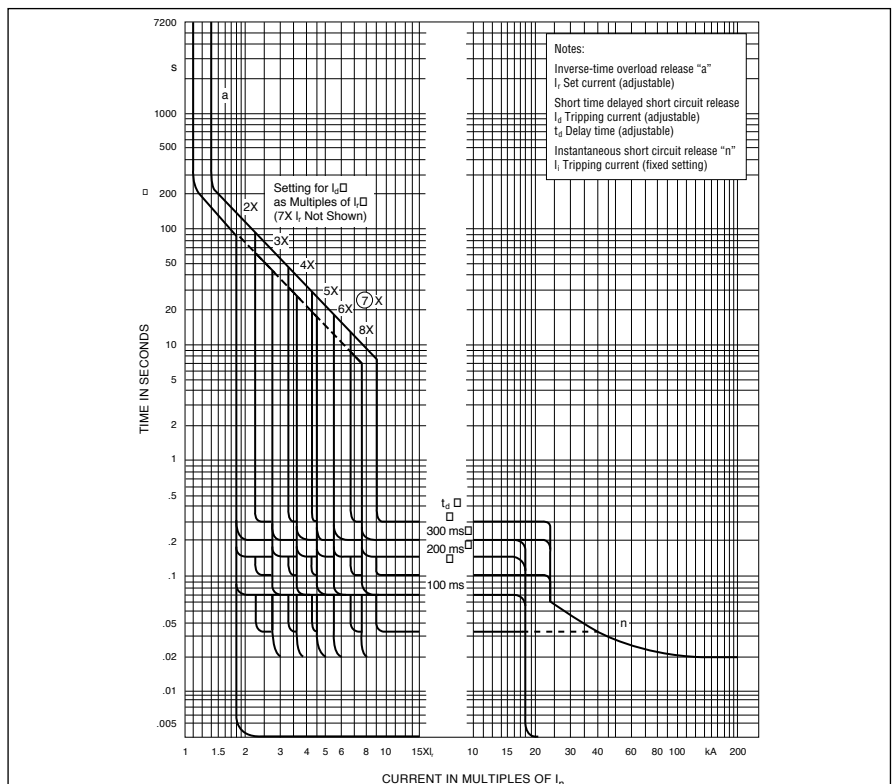


Working Temperature Range

The tolerance bands shown are applicable to an ambient temperature range of -5 to +60°C at the circuit breaker.

Type RG

Tripping characteristics for RW circuit breakers, I_{cu} 70/100 kA, with solid-state overcurrent release.



Working Temperature Range

The tolerance bands shown are applicable to an ambient temperature range of -5 to +60°C at the circuit breaker.

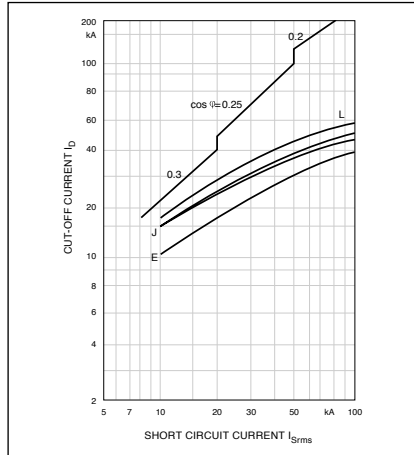
Frame Sizes EG through RG

Current Limiting Curves

Current Limiting Characteristics and Maximum I²t Values

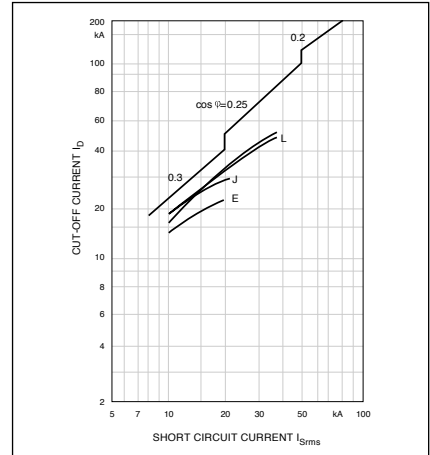
Type EG/JG/LG

Current limiting characteristics for EG to LG, 50/60 Hz 380/415 Vac.



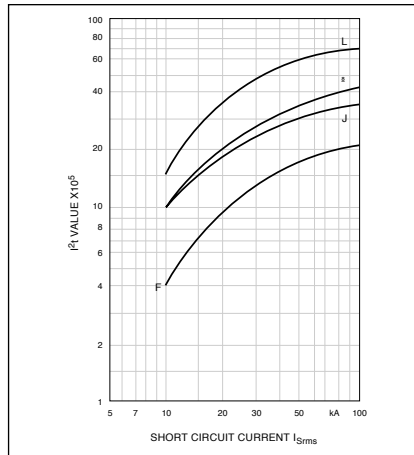
Type EG/JG/LG

Current limiting characteristics for EG to LG, 50/60 Hz 660/690 Vac.



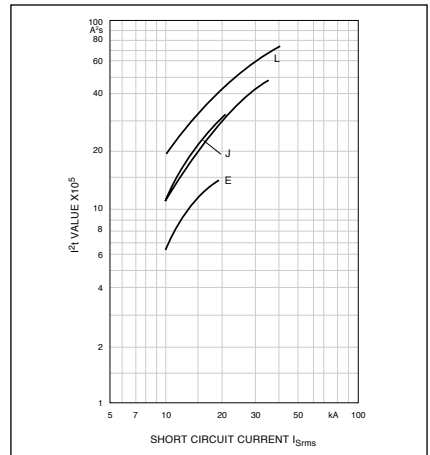
Type EG/JG/LG

Maximum I²t values for EG to LG, 50/60 Hz 380/415 Vac.



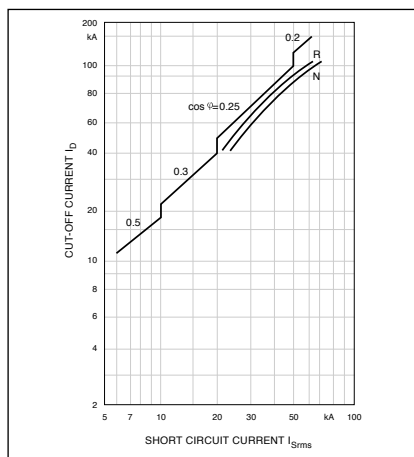
Type EG/JG/LG

Maximum I²t values for EG to LG, 50/60 Hz 660/695 Vac.



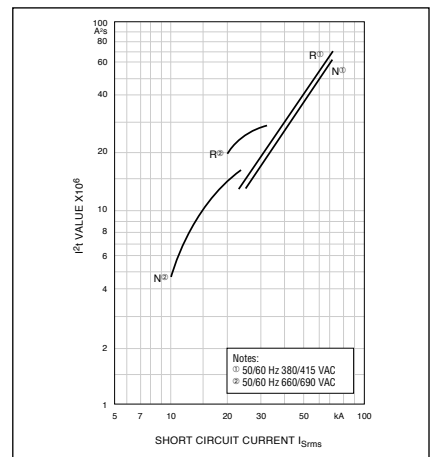
Type NG/RG

Current limiting characteristics I_p for NG to RG, 50/60 Hz 380/415 Vac.



Type NG/RG

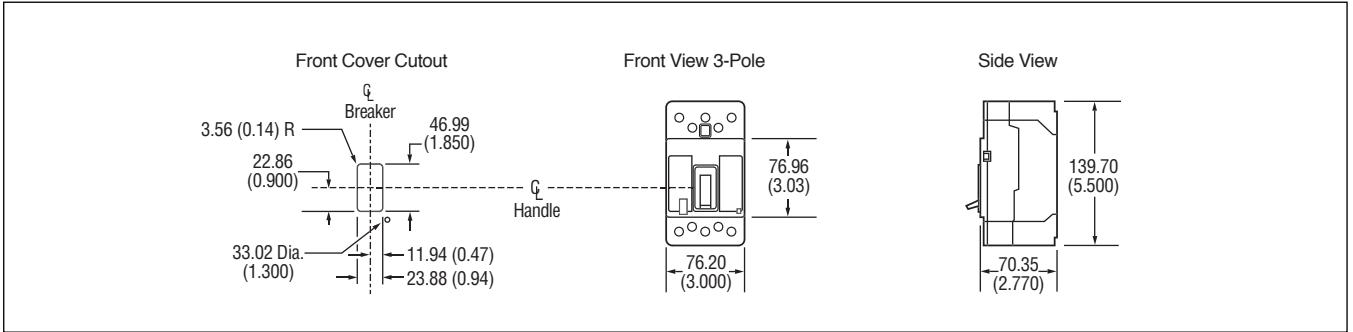
Maximum I²t values for NG to RG.



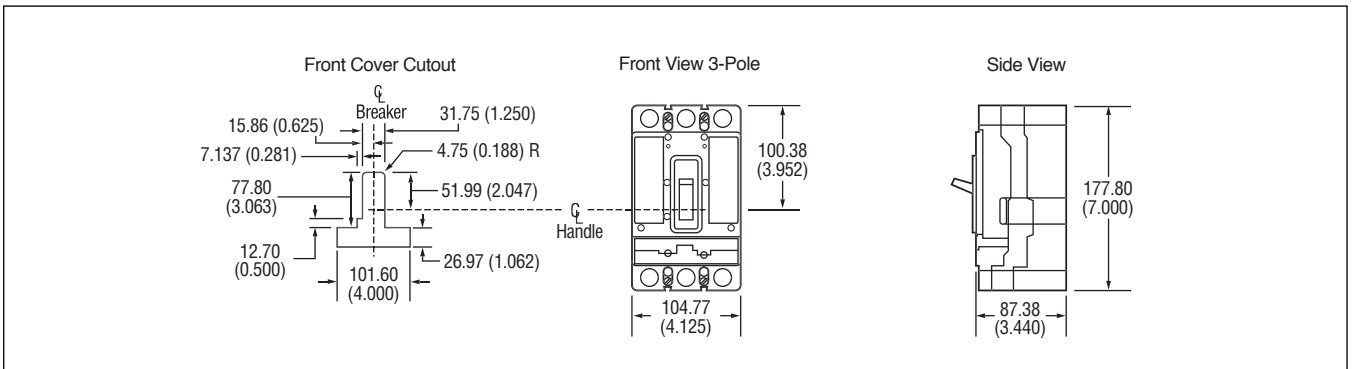
Frame Sizes EG through JG

Dimensions, mm (inches)

EG-Frame



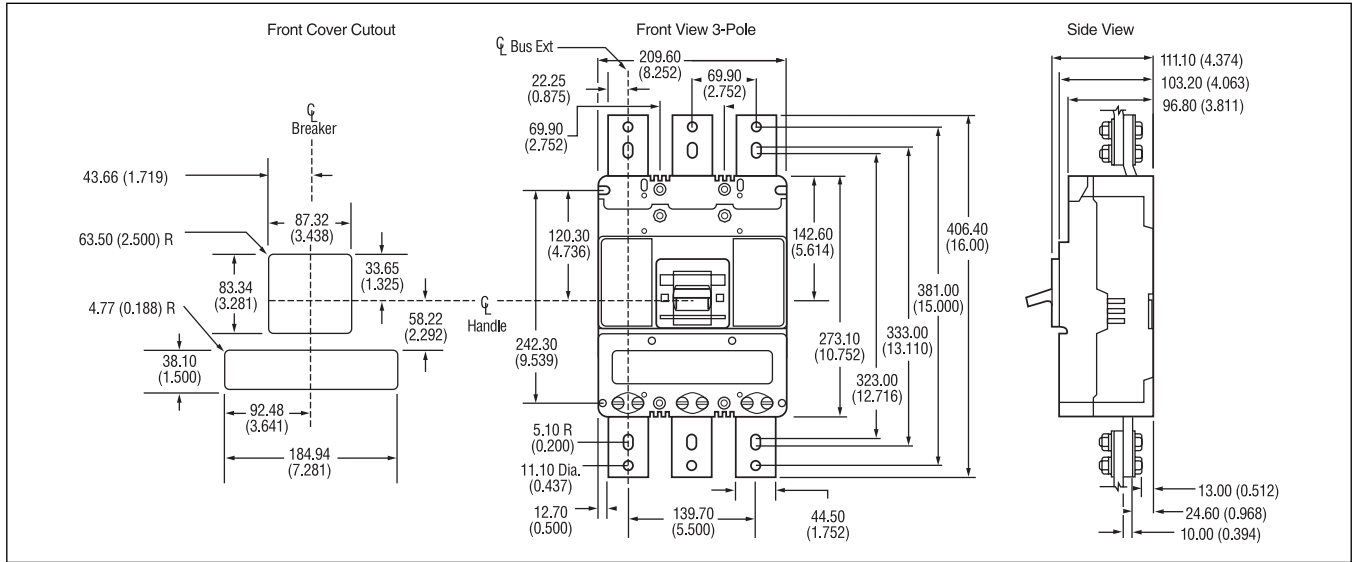
JG-Frame



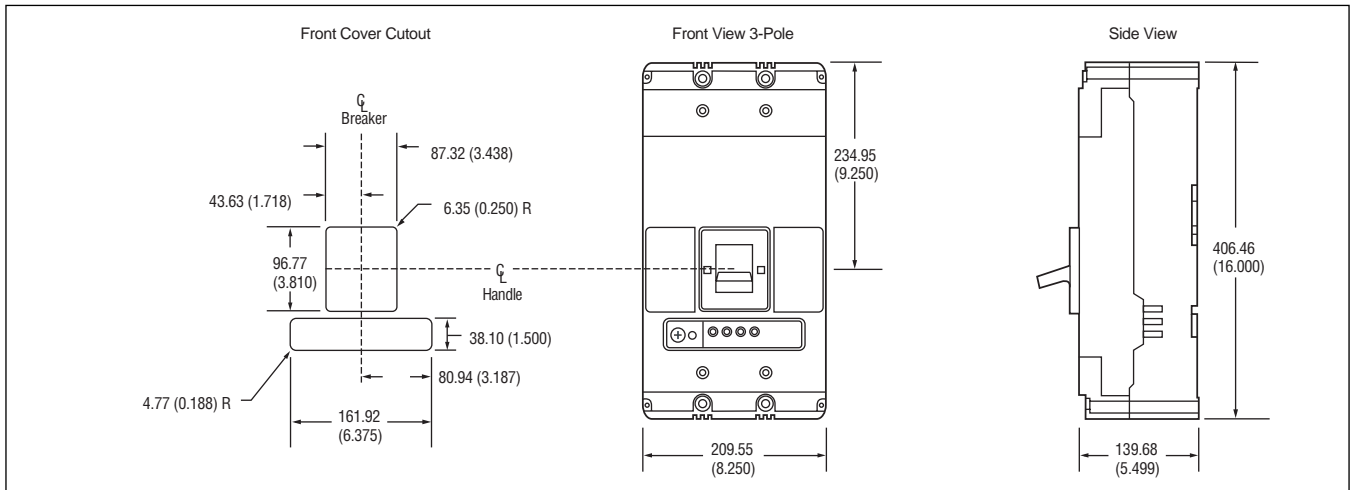
Frame Sizes LG through RG

Dimensions, mm (inches)

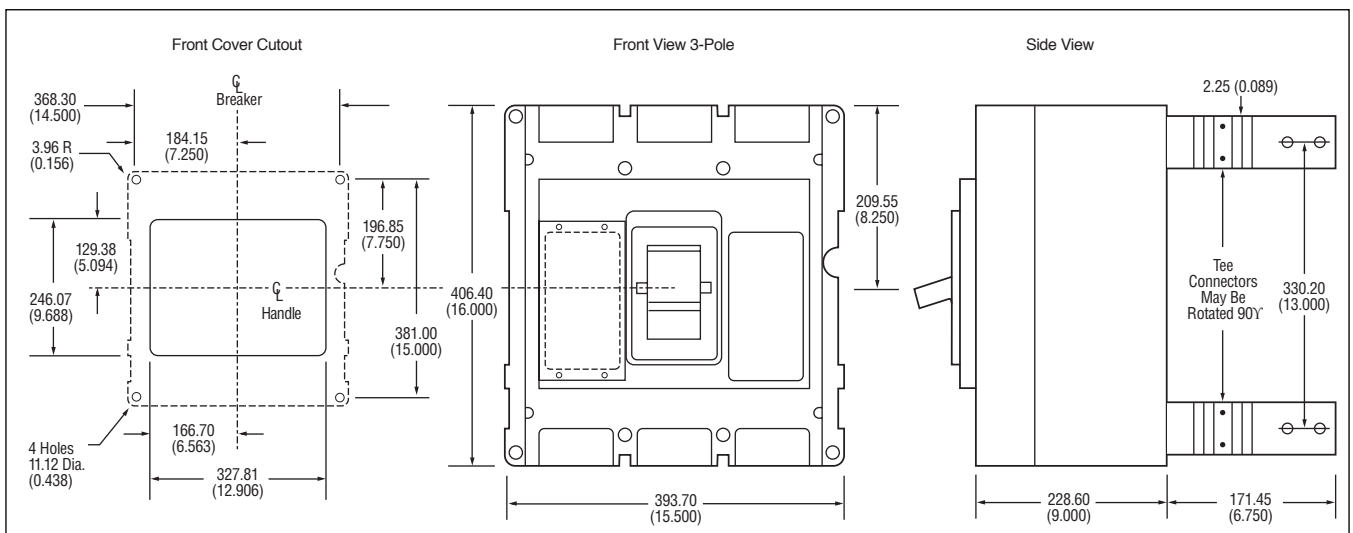
LG-Frame (Bus extensions not included)



NG-Frame



RG-Frame



Dimensions in parentheses in inches.