Current limiting circuit breaker module

Power demand continues to grow in new and existing facilities. To meet increased demand, larger utility supplies, spot networks and large facility transformers are installed. The increased capacity of the electrical source provides increased fault currents. In the past, 65 kA and 100 kA overcurrent protective devices may have suited the job. The new systems require in excess of 100 kA short-circuit protection. Eaton manufactures non-fused current limiting modules with interrupting capacities up to 150 kA at 480 Vac. Unlike fused current limiters with a one-time use, the current limiter module provides automatic reset of the module after interruption. Reset the molded case circuit breaker to restore power to the system without worry of finding the correct replacement fuse.

Description

The current limiting breaker modules use a reverse loop stationary contact arm. When high short-circuit current is flowing through the contacts of these modules, the positions of the reverse loop and moving contact arm induce opposing magnetic fields. The resulting flux lines cause rapid contact blow-apart under fault conditions, resulting in very high interrupting capacities and providing current limiting characteristics. Current limiting breaker modules, in combination with Series G® E-Frame breakers, are available from 15A through 100A and have an interrupting rating up to 100 kA at 600 Vac.

Applications

These breakers are most commonly applied when very high fault levels are available and with applications where the current limiting capability is used upstream of the final load to limit current to the load. Typical loads include lighting and power distribution, and motor controller applications.

Benefits

The combination of the Series G E-Frame current limiting breaker or HMCP and the current limiter module provides the following system protection:

- Overloads, by using inverse time current tripping characteristics of the molded case circuit breaker
- Low-level short circuits, by using instantaneous and/or short-time delay tripping characteristics of the molded case circuit breaker
- High-level short circuits, by using ultra-high-speed, blow-apart contacts of the current limiting module in series with the circuit breaker contacts. The high-level current limiting action is achieved by the use of special design, blow-apart contacts. The opening speed of the contacts is amplified by the repulsion force in the patented slot motor and reverse loop stationary contact arm to effectively separate the contacts under high-level fault conditions in less than one millisecond. The rapid rise of arc voltage introduces impedance into the system, thus limiting the amount of the otherwise available fault current

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Catalog numbers and dimensions in inches (mm)

UL® Listed (NEMA®/IEC Rated) Base Molded Case Circuit Breaker	Breaker with Line Side Mounted Current Limiter	Breaker with Load Side Mounted Current Limiter	Line and Load Terminations Included	Interphase Barrier Included for Limiter ❶	Dimensions for Assembled Breaker and Current Limiter Module (HxWxD)
EGC3015FFG	EGC3015FFGQ01	EGC3015FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3016FFG	EGC3016FFGQ01	EGC3016FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3020FFG	EGC3020FFGQ01	EGC3020FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3025FFG	EGC3025FFGQ01	EGC3025FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3030FFG	EGC3030FFGQ01	EGC3030FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3032FFG	EGC3032FFGQ01	EGC3032FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3035FFG	EGC3035FFGQ01	EGC3035FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3040FFG	EGC3040FFGQ01	EGC3040FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3045FFG	EGC3045FFGQ01	EGC3045FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3050FFG	EGC3050FFGQ01	EGC3050FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3060FFG	EGC3060FFGQ01	EGC3060FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3063FFG	EGC3063FFGQ01	EGC3063FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3070FFG	EGC3070FFGQ01	EGC3070FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3080FFG	EGC3080FFGQ01	EGC3080FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3090FFG	EGC3090FFGQ01	EGC3090FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
EGC3100FFG	EGC3100FFGQ01	EGC3100FFGQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)

Motor Circuit Protector	Breaker with Line Side Mounted Current Limiter	Breaker with Load Side Mounted Current Limiter	Line and Load Terminations Included	Interphase Barrier Included for Limiter ❶	Dimensions for Assembled Breaker and Current Limiter Module (HxWxD)
HMCPE003A0C	HMCPE003A0CQ01	HMCPE003A0CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
HMCPE007C0C	HMCPE007C0CQ01	HMCPE007C0CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
HMCPE015E0C	HMCPE015E0CQ01	HMCPE015E0CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
HMCPE030H1C	HMCPE030H1CQ01	HMCPE030H1CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
HMCPE050K2C	HMCPE050K2CQ01	HMCPE050K2CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
HMCPE070M2C	HMCPE070M2CQ01	HMCPE070M2CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
HMCPE100R3C	HMCPE100R3CQ01	HMCPE100R3CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)
HMCPE100T3C	HMCPE100T3CQ01	HMCPE100T3CQ02	T125EF	EIPBSK	9.66 (245.7) x 3.00 (76.2) x 2.98 (75.8)

❶ Two interphase barriers are required on line-end mounted limiter; (2) line end of limiter. Four interphase barriers are required for load-end mounted limiter; (2) line end of breaker (2) load end of limiter.

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