

Comparison Between Molded-Case Circuit Breakers and Supplementary Protectors

| Molded-Case Circuit Breaker | Supplementary Protector |
|---|---|
| Always Listed | Component recognition |
| Applicable Standards: UL 489, CSA 22.2 No. 5 | Applicable Standards: UL 1077, CSA 22.2 No. 235 |
| A device designed to open and close a circuit by non-automatic means and to open the circuit automatically on a predetermined overcurrent without damage to itself when properly applied within its rating. [NEC, Article 100] | A manually resettable device designed to open the circuit automatically on a predetermined value of time versus current or voltage within an appliance or other electrical equipment. It may also be provided with manual means for opening and closing the circuit. |
| Provide branch circuit protection (conductor/wiring system short circuit protection) | Provide equipment protection where branch circuit protection is already provided. |
| Motor branch circuits can be protected by a UL 489 device, UL 508 device in combination with a short-circuit protective device, or UL 508 Type E self-protected device. | Supplementary Protectors cannot be applied as a motor branch, or branch circuit protection device. |
| In testing, must be able to interrupt its rated fault current and remain operational after the fault. | In testing, only may need to interrupt an overcurrent; may be nonoperational after a fault current is imposed |
| Intended to provide conductor protection in accordance with the National Electrical Code (NEC). | Not evaluated to provide conductor protection and cannot be used in branch circuits. |
| Not allowed to rely on a series protective device for conductor protection. | Allowed to be tested with a branch-circuit device in series with the supplementary protector. |
| Required to protect downstream wiring and appliances. | Used in an appliance; may provide some wiring and appliance protection. |
| Cannot rely on other devices to provide overcurrent protection as defined in the NEC. | May rely on a separate device to assist with short-circuit and ground-fault conditions, such as a branch-circuit protective device or a separate in-line fuse. |
| Has minimum short-circuit-interrupting ratings of 5000 A at 250 V and less; and, 10,000 A at above 250 V. | Has a typical maximum short-circuit current rating of 5000 A, but need not have been evaluated for short-circuit conditions during the recognition. May be evaluated for greater than 5000 A and may be evaluated at any value declared by the manufacturer. |

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| Typically mounts in listed circuit-breaker panelboards. | Typically mounts (as a component of a listed assembly) in appliances or on DIN rails and is typically smaller than a molded-case circuit breaker. |
| Required to close on fault conditions. | Typically not required to close on fault conditions. |
| Has trip-curve characteristics developed for protection of branch and feeder circuits. | Has no standard trip curve established by the product safety standard to ensure protection of conductors in the event of an overload or short-circuit condition. |
| Spacing (UL 489, 600V): 1 inch through air and 2 inches over surface. | Spacing (UL 100, 600V, General Industrial Use): 3/8 inch through air and 1/2 inch over surface. |
| Overload Protection (UL 489): 6 times rating | Overload Protection (UL 1077): 1-1/2 times rating Horsepower rating: 6 times rating. |
| Carries no conditions of use (acceptability). | Carries specific conditions for use (acceptability) that must be followed to ensure that the device will meet minimum electrical fire and shock requirements. |