

Next generation Compact Circuit Protector (cat. no. CCP2) for Class CF CUBEFuse fuses



Bussmann series CCP2 for CUBEFuse with right side mechanism for through-the-door operation.

Why would I replace the UL® 1077 supplementary protectors that I currently install in my panels with the CCP2?

UL 1077 supplementary protectors are being misapplied and used for branch circuit protection in numerous industrial control panel applications throughout the industry. They are intended to be used as a component within a finished product such as commercial appliances, kitchen appliances and

lighting fixtures. These devices are not suitable for branch circuit protection and cannot be used for this purpose per 240.10 of the National Electrical Code (NEC®). The CCP2 is a cost-effective solution, similar in size to a supplementary protector, but with higher interrupting ratings while providing better current-limiting overcurrent protection. The CCP2 with Class CF CUBEFuse™ (with Class J performance) is listed under UL 98 and can be used for branch circuit protection and as a branch circuit disconnect, making it easy to replace a misapplied UL 1077 supplementary protector.

I use UL 489 Listed circuit breakers at 240 V. Why would I replace them with the CCP2?

UL 489 Listed circuit breakers rated for 240V may have a similar footprint as the CCP2; however, their interrupting rating is typically less than 14 kA. This limits the equipment assembly short-circuit current rating (SCCR) and the application of the equipment, unless more expensive and larger circuit breakers with higher interrupting ratings are used. The CCP2 with CUBEFuse is similar in price to 240 V circuit breakers, but provides an interrupting rating of 200 kA and is straight rated at 600 V (2- and 3-pole). This makes it easier to design the CCP2 into different applications requiring effective overcurrent protection, high interrupting rating and increased equipment SCCR.

For motor applications, I use UL 508 Listed Self Protected Starters (SPS) and a magnetic contactor rated for 480/277 V with an SCCR of 65 kA. What would be the benefit of using a CCP2?

SPSs with magnetic contactors typically have slash voltage ratings (480/277 V). This limits the application to solidly grounded Wye systems only, and not permitted on ungrounded, resistance grounded or corner grounded systems, which are becoming more common. The SCCR for self-protected starters and contactors also decreases at higher voltage ratings. The SCCR can also be decreased by the magnetic contactor if it is from a different manufacturer or if the manufacturer of the SPS and magnetic contactor has not tested the combination at a higher short-circuit current rating. On the other hand, the 3-pole CCP2 with CUBEFuse, and a magnetic starter combination, can be used for this application. The straight voltage rating will be 600 V, allowing it to be used with Wye grounded, ungrounded, resistance grounded or corner grounded systems. The Bussmann series CUBEFuse has been tested with a variety of magnetic starter manufacturers, allowing CCP2 with CUBEFuse and magnetic starters to have a combination SCCR of 100 kA and provide Type 2 “No Damage” Protection when properly sized. These combinations are detailed in the Type 2 Protection Tables in the Bussmann Division Selecting Protective Devices (SPD) handbook (Pub. no. 3002).

I currently use a UL 489 circuit breaker rated for full voltage at 480 V with a magnetic starter for motor applications. What benefit would the CCP2 provide if my combination is rated for full voltage?

UL 489 circuit breakers rated for 480 V can have a variety of interrupting ratings, typically from 14 kA up to 100 kA. A circuit breaker with a high interrupting rating is very expensive compared to the 3-pole CCP2 with CUBEFuse. The footprint used in the panel is typically three times larger than a CCP2, which also increases the overall cost of the equipment. Replacing the circuit breaker with a 3-pole CCP2 with CUBEFuse provides a much smaller footprint — up to 1/3 of the size and at a much lower cost — saving panel space.



Powering Business Worldwide

Can the CCP2 be used to protect Variable Frequency Drives (VFDs)?

Yes, the 3-pole CCP2 with CUBEFuse is a cost-effective, compact solution for protection of power electronic devices, such as VFDs. Many of the VFDs also have high combination short-circuit current ratings with Class J fuses. With its UL 98 Listing, the 3-pole CCP2 can be used as a branch circuit overcurrent protective device and motor branch circuit disconnect. Other devices available on the market, such as Motor Circuit Protectors (MCP), require that the VFD be listed as a combination in order to be used as a motor branch circuit disconnect or for branch circuit protection. In addition, most VFDs do not have combination ratings above 5 kA with MCPs or circuit breakers. It may be possible to achieve a high SCCR with an SPS and VFD, but the voltage rating is typically slash rated, limiting the application to only solidly grounded Wye systems. The CCP2 with CUBEFuse also has a straight voltage rating of 600 V and higher short-circuit current ratings than other devices such as SPS, MCP or UL 489 Listed circuit breakers, which typically are slash-rated or have an SCCR of less than 5 kA.

I currently use finger-safe fuse holders which provide the protection of a fuse and isolation when I want to isolate the load. What is the benefit of the CCP2?

Per the NEC, fuse holders listed to UL 4248 are not allowed nor rated to be used as a branch circuit disconnect. To isolate the load, a device such as a branch circuit disconnect switch listed to UL 98 should be installed upstream of the fuse holder for proper application. The CCP2 with CUBEFuse offers a UL 98 Listed branch circuit disconnect switch and branch circuit overcurrent protection in the same footprint as a finger-safe fuse holder without the need of additional devices for load isolation.

Can the CCP2 be used as a main disconnect?

Yes, the CCP2 with CUBEFuse is UL 98 Listed and can be used as a main or branch circuit disconnect for the panel and for branch circuit overcurrent protection.

Has the CCP2 been tested for vibrating environments?

The CCP2 was tested for vibration under the standard for UL 98, section SA5.1 without any mechanical or electrical failures observed.

Does the local indication tell me exactly which fuse opened?

Yes, each pole of the CCP2 includes a local indication light, which will illuminate when the switch is closed, circuit complete and energized, and the fuse in that pole has opened.

What type of lockout device can I install in the CCP2?

The CCP2 with CUBEFuse lockout/tagout can be accomplished with a ¼" lock on the switch base. The rotary mechanisms also have provisions for a ¼" lock.

Does the CCP2 switch open when there is a short-circuit or overload?

No, the CCP2 switch is rated as a disconnect and does not trip on overloads or short-circuits, nor is it a shunt-

trip switch. In case of a short-circuit or overload, the fuse installed in the CCP2 will open and the switch will remain in the ON position until it is turned OFF by an operator in order to replace the fuse after the cause of the overcurrent condition has been corrected. If the circuit has a magnetic contactor, such as for automatic motor control, the optional PLC fuse monitor can be utilized to signal a PLC and the contactor to de-energize all phases, if desired.

Can I use several 1-pole CCP2 devices and gang them together to build multi-pole units?

UL does not allow the assembly of multi-pole units from 1-pole units due to the UL 98 requirement for markings on the device. Therefore, 2- and 3-pole units need to ship assembled from the factory. The Bussmann series CCP2 is offered in configurations of 1-, 2- and 3-pole units per fuse model.

Is there a comb bar available to use with the CCP2?

Currently there is not a comb busbar available to use with the CCP2. However, the CCP2 is rated for dual wiring and connection from CCP2 to CCP2 can be accomplished by wiring between them.

Can I use the fork terminal connection on the CCP2 as my connection for line and load, or do I need to use the box lug connection?

The CCP2 includes a box lug connection and a fork terminal connection at the lineside and loadside. The fork terminal is used to connect the PLC remote monitoring device, if required. If the remote monitoring device is not installed, the fork terminal can be used as the line and load connection since it is rated for 30 A. Both connections can also be used at the same time, providing the flexibility of using both the box lug and the fork terminal connections.

Is there a front through-the-door or side rotary mechanism for the CCP2?

Yes, there is a front through-the-door and side rotary mechanism for the CCP2 with CUBEFuse.

Can I field install the front and side rotary mechanisms?

No, the rotary mechanisms cannot be field installed.

Are the new through-the-door mechanisms backward compatible with CCP units?

No, the new through-the-door mechanisms are not backward compatible.

How do I open the circuit after a fuse opens?

The CCP2-PLC-IND can be used to send a 24 Vdc output signal that a fuse in the CCP2 has opened. This could then be used to open a contactor (controller) and de-energize a circuit.

Note: PRACTICAL experience has demonstrated that motor running overload devices properly sized and maintained can greatly reduce the problems of single-phasing for the majority of motor installations. This is because the loss of one phase in a motor circuit will typically cause an overload current in the other phase(s). In some instances, additional

protective means may be necessary when a higher degree of single-phasing protection is required. Generally, smaller horsepower rated motors have more thermal capacity than larger horsepower rated motors and are more likely to be protected by conventional motor running overload devices.

Summary of suggestions to protect against single-phasing of motor circuits:

1. For fully loaded motors, size the heater elements or set the overload protection properly per the motor nameplate FLA.
2. If the motor is oversized for the application or not fully loaded, then determine the load current via a clamp on amp meter and size the heaters or set the overload protection per the motor running current.
3. Electronic motor overload protective devices typically have provisions to signal the controller to open if the phase currents/voltages are significantly unbalanced or phase loss occurs.
4. Install phase voltage monitor devices that detect loss of phase or significant imbalances and signal the controller to open.

For more information, see the Bussmann Division Selecting Protective Devices (SPD) handbook (pub no. 3002) section: Motor Protection - Voltage Unbalance and Single-Phasing.

Can the PLC fuse monitor accessory CCP2-PLC-___ be used for 1-, 2- or 3-pole installations?

Yes. For 1- and 2-pole applications, it is recommended to trim the unused wire terminals from the accessory prior to installation in the panel.

In the event that a fuse opens in a 2- or 3-pole CCP2, would the PLC fuse monitor accessory tell me which fuse has opened?

The device will send a signal when one of the fuses opens, but it will not identify which fuse has opened. To identify which fuse opened, the CCP2 provides local indication.

What voltage does the PLC fuse monitor accessory accept?

The input voltage for the PLC remote indication accessory is 24 Vdc. The output signal is 24 Vdc and the circuit monitoring voltage across the CCP2 can be 100 Vac to 600 Vac.

What is the function of the auxiliary contact accessory?

The auxiliary contact includes one NO (normally open) and one NC (normally closed) contact to signal the switch status (open or closed), and can be tied to a contactor or other device downstream of the CCP2. It can also provide switch status to a building management system.

How many PLC fuse monitor accessories and auxiliary contact accessories can I install per CCP?

One PLC fuse monitor accessory and one auxiliary contact can be installed per CCP2. The PLC fuse monitor accessory mounts on the left side of the CCP2 and the auxiliary contact mounts on the right side of the CCP2.

What tooling is required to mount the PLC fuse monitor and the auxiliary contact accessories?

No tooling is required to mount the accessories to the sides of the CCP2. A screwdriver is required to connect the fork terminals of the PLC fuse monitor accessory to the CCP2 and unused wires can be trimmed as needed.

Is there any footprint change between the CCP and the CCP2?

No, there is no footprint change between the CCP and the CCP2.

Are the new multi-wire lug accessories backwards compatible?

No, the multiwire lugs are not backwards compatible.

For additional information, see data sheet no. 10801.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
Eaton.com

Bussmann Division
114 Old State Road
Ellisville, MO 63021
United States
Eaton.com/bussmannseries

© 2018 Eaton
All Rights Reserved
Printed in USA
Publication No. 10825
September 2018

Eaton and Bussmann are valuable trademarks of Eaton in the U.S. and other countries. You are not permitted to use the Eaton trademarks without prior written consent of Eaton.

NEC is a registered trademark of the National Fire Protection Association, Inc. UL is a registered trademark of the Underwriters Laboratories, Inc.

For Eaton's Bussmann series product information, call **1-855-287-7626** or visit: **Eaton.com/bussmannseries**

Follow us on social media to get the latest product and support information.

