

Next generation Compact Circuit Protector (cat. no. CCP2) for Class CC, supplemental and 10x38 mm fuses



Bussmann™ series CCP2 for Class CC fuses 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 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 National Electrical Code (NEC®) 240.10. 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 CC fuses is a UL® 98 Listed disconnect 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?

While UL 489 Listed circuit breakers rated for 240 V may have a similar footprint to the CCP2, their interrupting rating is typically less than 14 kA. This limits the panel 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 Class CC fuses is similar in price to 240 V circuit breakers, but provides a 200 kA interrupting rating and is rated at 600 V (2-pole 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.

I use a miniature circuit breaker to protect my control transformer since UL 508A allows the use of supplementary protection if I tap from the motor branch circuit.

When the control transformer is tapped from the motor branch circuit, only supplemental protection is required. However, the equipment SCCR cannot be higher than the interrupting rating of the control circuit overcurrent protective device. If the miniature circuit breaker has an interrupting rating of 5 kA or 10 kA, the total equipment SCCR will be 5 kA or 10 kA. The CCP2-CC can be used in these applications to provide overcurrent protection, high interrupting rating and increased equipment SCCR up to 200 kA.

For motor applications, I use UL 508 Listed Self Protected Starters (SPSs) 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 only solidly grounded Wye systems and not permitted on ungrounded, resistance grounded or corner grounded systems that are becoming more common. The SCCR for SPSs 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 SCCR. A magnetic strike, combined with a 3-pole CCP2 with Class CC fuses would be a much better alternative for this application. The voltage rating will be 600 V, allowing it to be used with Wye grounded, ungrounded, resistance grounded or corner grounded systems. Bussmann series Class CC fuses have been tested with a variety of magnetic starter manufacturers, allowing CCP2 with Class CC fuses 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, publication no. 3002.



Powering Business Worldwide

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 Class CC fuses.

The circuit breaker footprint used 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 Class CC fuses provides a much smaller footprint – up to 1/3 of the size and at a much lower cost.

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

Yes, the 3-pole CCP2 with Class CC fuses is a cost-effective, compact solution for protection of power electronic devices, such as VFDs. Many of the VFDs also have high combination SCCRs with Class CC 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 Class CC fuses also has a full voltage rating of 600 V and higher SCCRs than other devices such as SPSs, MCPs 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 modular fuse holders that 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 Class CC fuses offers a UL 98 Listed branch circuit disconnect switch and branch circuit overcurrent protection in the same footprint as a finger-safe modular fuse holder without the need of additional devices for load isolation.

Can the CCP2 be used as a main disconnect?

Yes, the CCP2 with Class CC fuses 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 with Class CC fuses was tested for vibration under the standard for UL 98, section SA7 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?

There are several lockout manufacturers that provide standard lockout devices that can be used for the CCP2 with Class CC fuses, such as pin-out, lockout devices by IDEAL Industries p/n: 44-779 or Brady p/n: 90844.

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 wired remote open-fuse indication 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 or 508 Listing requirements. Therefore, 2- and 3-pole units need to ship assembled from the factory. The Busmann 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 box lug terminal is rated for dual wires 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 terminal?

The CCP2 includes a box lug terminal 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 through-the-door mechanism for the CCP2?

Yes, there are front and side rotary through-the-door mechanisms for the CCP2 with Class CC, supplemental or 10x38 mm fuses.

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 full 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, publication no. 3002.

Can the PLC remote fuse monitor accessory CCP2-PLC-IND 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 remote 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 remote fuse monitor accessory accept?

The input voltage for the PLC remote monitor accessory needs to be 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 remote fuse monitor accessories and auxiliary contact accessories can I install per CCP?

One PLC remote fuse monitor accessory and one auxiliary contact can be installed per CCP2. The remote fuse indication 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 remote fuse monitor and the auxiliary contact accessories?

No tooling is required to mount these accessories to the sides of the CCP2. A screwdriver is required to connect the fork terminals of the PLC remote 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 Class CC versions?

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

Is the new multi-wire lug kit accessory backwards compatible?

No, the multi-wire lugs are not backwards compatible with the legacy CCP.

For additional information, see data sheet no. 10789.

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. 10794
July 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.

