

## Bussmann® series Power Module™ Switch Frequently Asked Questions



**For more information or if you have additional questions, please contact EatonCare. 855-287-7626.**

**1. To which installation codes does the Bussmann series Power Module switch comply?**

- UL 98 enclosed and dead-front switch
- NFPA-70 (NEC®) 2014 Edition- Section 620.51(A)-(D), 620.62, 620.91(C)
- Canadian Electric Code Part 1 (2015 Edition) Section 38-051, 38-062
- NFPA-72 2016 Edition - Section 12.4.4

All work shall be performed in accordance with the latest edition of applicable standards, codes, and laws.

**2. What kind of fuses does Eaton's Bussmann Division recommend?**

Bussmann series Class J LPJ\_SP or LPJ\_SPI (indication version) dual-element, time-delay fuses. The panel's holders only accept this class of fuse. The fuses are current limiting for good short-circuit and motor overload protection, and minimizing arc flash hazards. For general fuse sizing the NEC® 430.52 allows sizing time-delay fuses used in motor branch circuits up to 175% of the motor full load amps.

**3. How does the mechanical auxiliary contact option A work?**

The "A" option is a set of auxiliary contacts that are mechanically interlocked to the main switch. The contacts are used to enable or disable the Battery Lowering Device (BLD) for maintenance per NFPA code. It is important to note that these contacts can differentiate between manually turned OFF or shunted OFF (see table below). The most common contact is the "NC" (normally closed).

**Table 1. Auxiliary switch logic — option A**

Main switch position	Option A		Option B		Option A *	
	NO	NC	NO	NC	NO	NC
Closed	O	C	O	C	O	C
Tripped	C	C	O	C	C	O
Open	C	O	C	O	C	O

\* Auxiliary switch logic when blue wire with "+" marker is removed from NC terminal.



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**4. How does the mechanical auxiliary contact option B work?**

The “B” option provides a second set of auxiliary contacts that are mechanically interlocked to the main switch. These contacts are generally used to monitor the status of the switch. It is important to note that these contacts will follow the state of the external handle (see table below and Figure 1).

Table 2. Mechanical auxiliary contact

Main switch	Contact state		FACP
	NO	NC	NCFR/NCB
OFF, power available	Open	Closed	Open
ON, power available	Closed	Open	Open
OFF, no power	Open	Closed	Open
ON, no power	Closed	Open	Closed

**5. How does the special wiring option for maintaining normal status signal to the Fire Alarm Control Panel (FACP) work?**

For Arizona and other areas requiring this feature, internal wiring between the molded case switch’s auxiliary contacts and the fire relay’s contacts implements a logic circuit that monitors the availability of shunt-trip power. The FR relay closes only if the main switch is ON and the shunt-trip power fails. They will not close if the main switch is manually turned OFF for maintenance, the Series B contact will open, thus preventing a false alarm. (Refer to Table 2 and Figure 1).

**6. Does the instantaneous trip feature built into the molded case switch create the potential to strand passengers when used on circuits with hydraulic elevators and auxiliary battery lowering?**

No, the Battery Lowering Device (BLD) remains operational under a shunt-trip condition. The shunt-trip mechanism within the switch is utilized, not the instantaneous trip feature of the switch. The proper fuse selection will prevent instantaneous trip. Even in the event of an instantaneous trip condition, the alarm relay will respond the same as when the switch is shunted off. There is no potential for stranding passengers when units are installed with the Mechanical Interlock Auxiliary Contact Option (Option A, battery back-up feature).

**7. During a power loss, will the state of the switch change state (F1 or F3 option)?**

The Bussmann series Power Module switch will not change state. The Power Module Voltage Monitoring Relay (F1 or F3 Option) does meet NFPA 72 (National Fire Alarm Code) requiring control circuits to shut down elevator power. The unit is wired to sense the voltage available to initiate the shunt-trip. It will change state if a power loss occurs. It does not rely on the shunt-trip itself. It will send a signal to the FACP upon power loss.

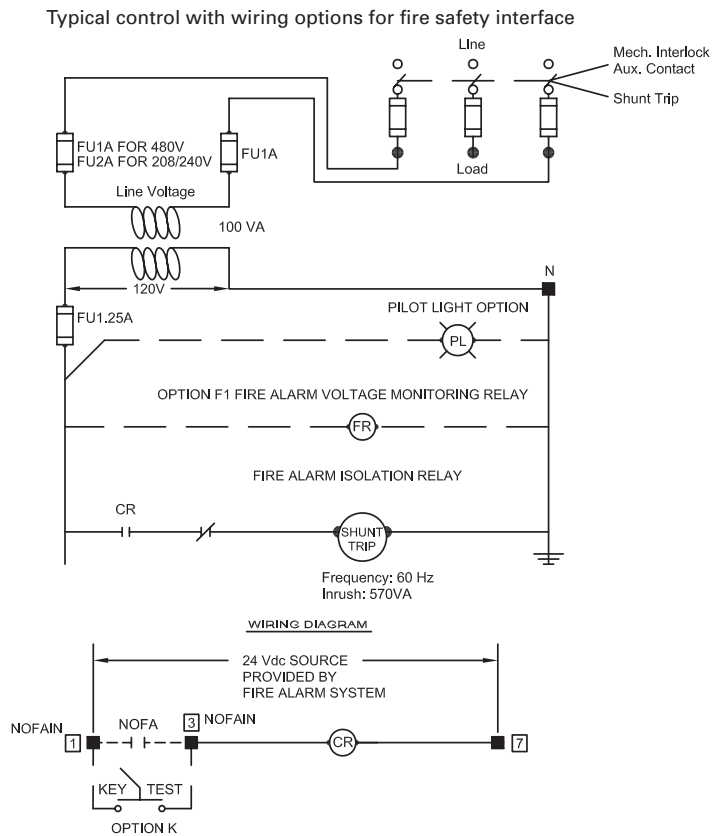
**8. How does the Bussmann series Power Module switch decide when the elevator needs to be lowered?**

The Bussmann series Power Module switch does not make that decision. It provides a signaling means to the fire alarm controller and BLD. The Power Module switch receives a signal from the FACP to shunt-trip, which in some cases results in the use of the Battery Lowering Device (BLD).

**9. Does the Bussmann series Power Module switch require any periodic maintenance?**

While no specific maintenance is called for, it is always a good practice to annually inspect the unit for any loose fuse clips or connections, or accumulation of foreign material.

Figure 1: Option R1 and F1



- Legend:**  
 FACP: Fire Alarm Control Panel.  
 NOFAIN: Normally open (NO) fire alarm control input.  
 NOFA: Normally open (NO) fire alarm contacts supplied from the fire alarm system to initiate the shunt trip.  
 SHUNT TRIP: Solenoid for remote trip of switch, which is activated by the closing of the fire alarm contacts or key test switch.  
 OPTION R1: Fire alarm interface relay that is operated at 120Vac from secondary transformer. No additional power needed.  
 CR: Control relay used to isolate the NOFA contacts from the duty of the shunt trip.  
 FR: Fire alarm voltage monitoring relay used to monitor the status of control voltage from a remote location (i.e., FACP).  
 PL: Pilot light to visually indicate presence of voltage on outside of switch enclosure.  
 CPT: Control Power Transformer used to step down line voltage to 120Vac to power shunt trip coil.  
 SW AUX: Option A or B, normally closed (NC) contact when switch is closed. Opens as power switch opens.  
 KEY TEST: Key-to-test switch used to operate shunt trip from the outside of switch enclosure.  
 Can be used for troubleshooting and inspection.  
 MECHANICALLY INTERLOCKED AUXILIARY CONTACT: Contact used to disable battery lowering device  
 ■ : Terminal block connection point  
 ● : Pre-wired connect points  
 NOTE: Terminal 1 is not present when option K is absent.

**10. How do you hook up the dry contacts for the Battery Lowering Device (BLD) option?**

This will depend on how the Mechanical Auxiliary Contact (Option A) will be connected. The A Option will follow the truth table noted below. The most common connection will be between NC and COM.

**Table 3. Auxiliary switch logic — Battery Lowering Device**

Main switch position	Option A		Option B		Option A *	
	NO	NC	NO	NC	NO	NC
Closed	O	C	O	C	O	C
Tripped	C	C	O	C	C	O
Open	C	O	C	O	C	O

\* Auxiliary Switch Logic when blue wire with “+” marker is removed from NC terminal.

Where local Authority Having Jurisdiction (AHJ) permits, field removal of the blue wire identified by “+” marker will change the Option A switch logic. Removal has the effect of disabling the battery lowering device when the switch is in the tripped position. Field installer must ensure this meets all local codes before removal.

**11. Where do you land the shunt-trip control wires on the terminal strip?**

For the R1 Option (120Vac), land the wires on Terminals 1 and 3 or NOFAIN and NOFAIN (Normally Open Fire Alarm IN). For the R2 (24Vdc) option, land the positive on Terminal 1 and the closure on Terminal 3, with the return on Terminal 7.

**12. Where does the fire alarm get connected for monitoring the status of the switch?**

This is commonly referred to as the FR relay and is Option F1 or F3. NCFR/COM FR is the most common. If an end of line (EOL) resistor is used, install it parallel to the wires.

**13. If a Bussmann series Power Module switch is ordered with a wrong component, can the component be changed in the field?**

No. To comply with UL guidelines, product modifications can only be completed by authorized factory personnel. Other modifications will void the UL listing.

**14. Can the Bussmann series Power Module switch be used as a service entrance switch?**

The Bussmann series Power Module switch is UL-Listed per UL 98. Yes, it can be used as a service entrance if properly labeled as such and proper ground bond requirements are met.

**15. Can the Bussmann series Power Module switch be fed in reverse with the line from the bottom and load out the top of the switch?**

No, the Bussmann series Power Module switch will not properly function.

**16. Can the Bussmann series Power Module switch be used in an application where no fire alarm exists and can a smoke detector be connected instead?**

No, this is not in accordance with the fire code. Commercial smoke detectors must be connected through the FACP.

**17. Does the FR Relay (Option F1 or F3) change state during a power loss?**

Yes, the FR relay will change state. The FR relay is designed to monitor voltage that is available for the shunt-trip. This is a requirement of NFPA 72.

**18. Is the operating handle of the Bussmann series Power Module switch lockable in the “OFF” position only?**

From the factory, the handle can only be locked in the “OFF” position and can accommodate a maximum of three padlocks. Field modification to drill the shroud can allow locking in the “ON” position. Check with your local AHJ for requirements. The switch will shunt trip as usual, even with the handle locked ON.

**19. What enclosures are available for the Bussmann series Power Module switch?**

All ratings of the Bussmann series Power Module switch come standard with a NEMA Type 1 enclosure. Optional enclosures include NEMA Type 3R, 4, and 12. Consult the factory for other options.

**20. Is a Control Power Transformer (CPT) always required in a Bussmann series Power Module switch?**

Yes, to meet NFPA codes, a CPT will be required to supply the 120Vac for shunt-tripping.

**21. I lost my key to the keyswitch, can I get another?**

Yes. The part number is E22KS2 if the back of the switch says E22. If the back of the switch says M22, the part number is M22-ES-MS1.

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**Eaton**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
Eaton.com

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

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