Fuses Made Simple™ - Control Circuits

BUSSMANN SERIES

The easiest and fastest way to select and specify the right control circuit fuse

EATON
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Eaton's Bussmann® series Fuses Made Simple program provides the easiest and fastest way to select and specify the right fuse. Whether it's branch circuit or control circuit (supplemental) fuses, we take the guesswork out of selecting the right fuse. With Fuses Made Simple - Control Circuits, we make it simple to replace control circuit fuses with six color coded groups (categorized by voltage rating) - all while enhancing the safety of the electrical system.

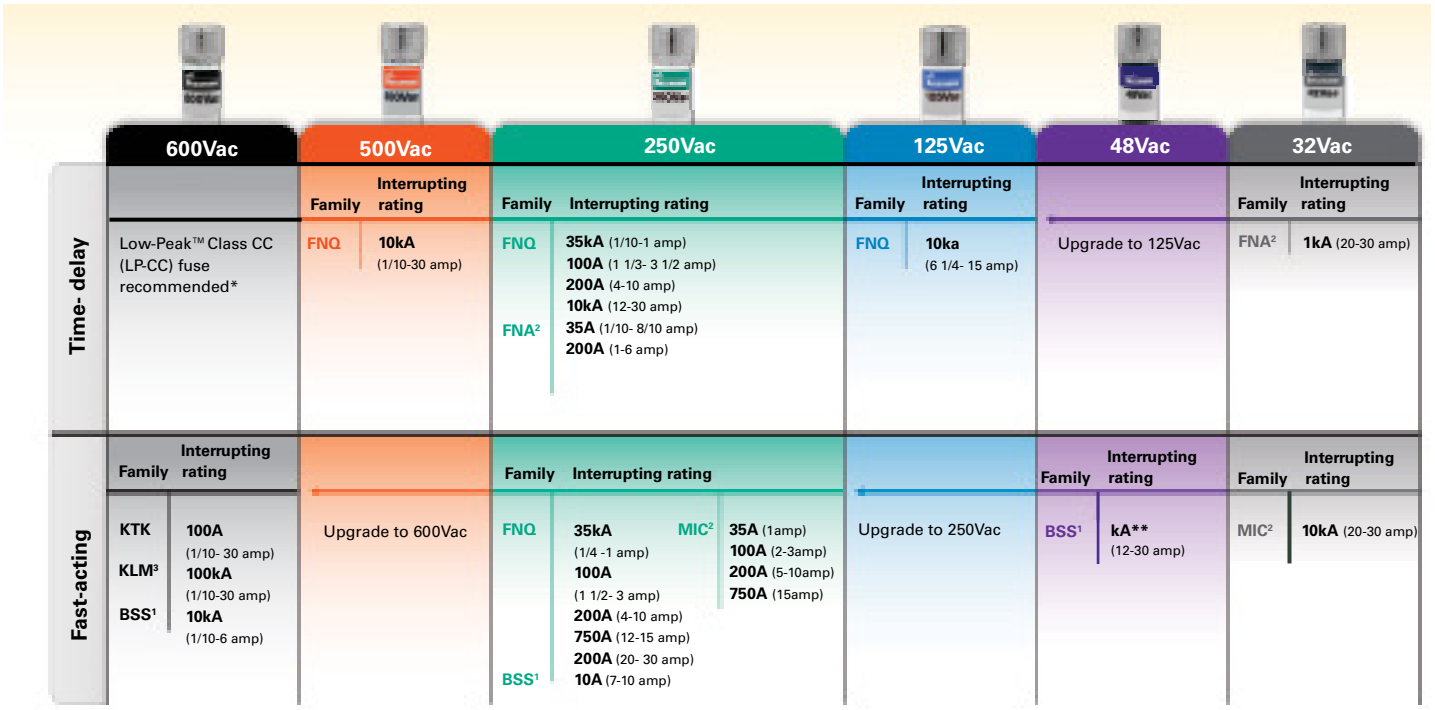
Find the Bussmann series control circuit fuse you need in three simple steps:

1 Type — Select the fuse type. Select from time-delay for inductive loads or fast-acting for resistive loads.

2 Voltage — Select the voltage rating needed. Keep in mind that the fuse voltage rating must be equal to or greater than the circuit voltage.

3 Interrupting ratings — Verify that the interrupting rating of the fuse selected is sufficient for the circuit application. Keep in mind that the interrupting rating must be equal to or greater than the available fault current.

Use the following table to find and select the right Bussmann series control circuit fuse:



	600Vac	500Vac	250Vac	125Vac	48Vac	32Vac
Time- delay	Low-Peak™ Class CC (LP-CC) fuse recommended*	Family: FNQ — Interrupting rating: 10kA (1/10-30 amp)	Family: FNQ — Interrupting rating: 35kA (1/10-1 amp), 100A (1 1/3- 3 1/2 amp), 200A (4-10 amp), 10kA (12-30 amp); Family: FNA² — 35A (1/10- 8/10 amp), 200A (1-6 amp)	Family: FNQ — Interrupting rating: 10ka (6 1/4- 15 amp)	Upgrade to 125Vac	Family: FNA² — Interrupting rating: 1kA (20-30 amp)
Fast-acting	Family: KTK, KLM³, BSS¹ — Interrupting rating: 100A (1/10- 30 amp), 100kA (1/10-30 amp), 10kA (1/10-6 amp)	Upgrade to 600Vac	Family: FNQ, BSS¹ — Interrupting rating: 35kA (1/4 -1 amp), 100A (1 1/2- 3 amp), 200A (4-10 amp), 750A (12-15 amp), 200A (20- 30 amp), 10A (7-10 amp); Family: MIC² — 35A (1amp), 100A (2-3amp), 200A (5-10amp), 750A (15amp)	Upgrade to 250Vac	Family: BSS¹ — Interrupting rating: kA** (12-30 amp)	Family: MIC² — Interrupting rating: 10kA (20-30 amp)

For ultimate protection, any of the control circuit fuses above can be upgraded to a branch circuit rated Bussmann series Low-Peak™ Class CC fuse (LP-CC).

¹Fuse is 1-3/8" long
²Fuse is pin indicating
³Fuse is also rated for 600Vdc.

*For primary protection of control transformers, use FNQ-R.
**For interrupting rating, contact factory.

Color-coded by voltage

Each fuse label has a unique identifying color band that represents the fuse's maximum voltage rating. When it's time to replace a fuse, Eaton's Bussmann Division makes it easy to search for the replacement. Select the voltage needed by simply looking for the Bussmann series fuse with the right color band in the storage bin. This narrows the search and speeds replacement time.

Easy selection by application

	Application*	Fast-acting					Time-delay		
		KTK	BAF	BBS	KLM	MIC	FNQ	FNA	FNM
1	General purpose, non-inductive loads	✓	✓	✓		✓			
2	277V lighting circuits	✓	✓				✓		✓
3	Meter circuits	✓	✓	✓			✓		✓
4	Any non-inductive load 600Vac and less	✓							
5	Any non-inductive load 250Vac and less	✓	✓						
6	DC control circuits up to 600Vdc				✓				
7	480V primary control transformer protection						✓		
8	DC control circuits requiring fast-acting fuses	✓			✓				
9	Lighting circuit protection	✓	✓				✓		✓
10	250V and less secondary control transformer protection						✓		✓
11	Lighting ballasts			✓			✓		✓
12	PLC circuits	✓		✓		✓		✓	
13	Electronic circuits	✓		✓		✓		✓	
14	Control circuits	✓		✓		✓		✓	
15	Solenoids (coils)						✓	✓	✓
16	Power supply	✓			✓		✓		
17	Appliances	✓	✓	✓			✓		
18	Flexible and extension cords	✓	✓				✓		
19	Control relay						✓		
20	Photovoltaic source circuits				✓				
21	Motor control circuits	✓					✓		✓
22	Auxiliary and signal contacts	✓							
23	Amplifier protection						✓		✓
24	Contactors						✓		✓
25	Testing equipment (meters)	✓		✓	✓				✓
26	Receptacles	✓					✓		✓

*Applied in circuits already properly protected by a branch circuit overcurrent protective device or when recognized by the NEC® to provide equivalent branch circuit overcurrent protection.

Complementary products

In addition to supplemental control circuit fuses, Bussmann series offers a broad portfolio of circuit protection solutions. Visit Eaton.com/bussmannseries to learn more.

Additional fuse portfolio

Fuses Made Simple™ UL low voltage

Class CF time-delay and fast-acting CUBEFuse™ UL fuses

High speed fuses

Electronic and small dimension fuses

Fuse holders, blocks, and power distribution blocks

Class J power distribution fuse blocks

Class CC and supplemental modular ferrule fuse blocks

Finger-safe power distribution blocks

Class CC, midset and PV compact modular fuse holders

Disconnect switches and safety switches

CUBEFuse Compact Circuit Protectors (CCP_CF)

Class CC and midget Compact Circuit Protectors (CCP)

Fused rotary disconnect switchs

Non-fused rotary disconnect switches

Surge protective devices

Type 1 SurgePOD™ HEAVY DUTY SPD's

Type 2 DIN-Rail SPDs

DIN-Rail data signal SPDs

BNC coaxial cable data signal SPDs

Enhanced safety

Importance of voltage rating and interrupting rating

Control circuit fuses have many different voltage ratings, ranging from 32 to 600Vac, and interrupting ratings up to 100kA. Because their physical size does not vary with voltage or interrupting ratings, the most frequent cause of misapplication is due to improper voltage or interrupting rating selection. This leads to compromised system integrity, and equipment and personnel safety. It is important to note, though, that when a fuse is applied beyond its ratings, there may not be any initial indicators. Adverse consequences typically result when a system fault occurs and an improperly sized fuse attempts to interrupt an overcurrent event.

Voltage rating

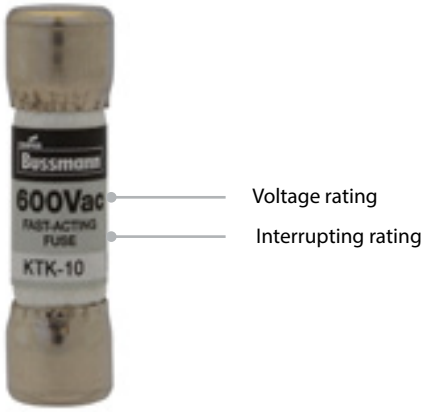
Voltage rating is extremely important. The proper application of an overcurrent protective device, according to its voltage rating, requires that the voltage rating of the device be equal to or greater than the system voltage. It can be higher but not lower. For instance, a 600V fuse can be used to safely protect a 208V circuit. However, when an overcurrent protective device is applied beyond its rating, there may be potential for fire and arcing energy, which poses a severe fire risk to other components in the panel.

Interrupting ratings

Interrupting rating is also of critical importance. An overcurrent protective device must be able to withstand the destructive energy of fault currents of the equipment it is protecting. If a fault current exceeds a level beyond the capacity of the protective device, the device may actually rupture, causing additional damage. It is therefore important when applying a fuse to use one that can sustain the largest potential fault currents. Failure to apply fuses with the appropriate interrupting rating can be a serious safety hazard.

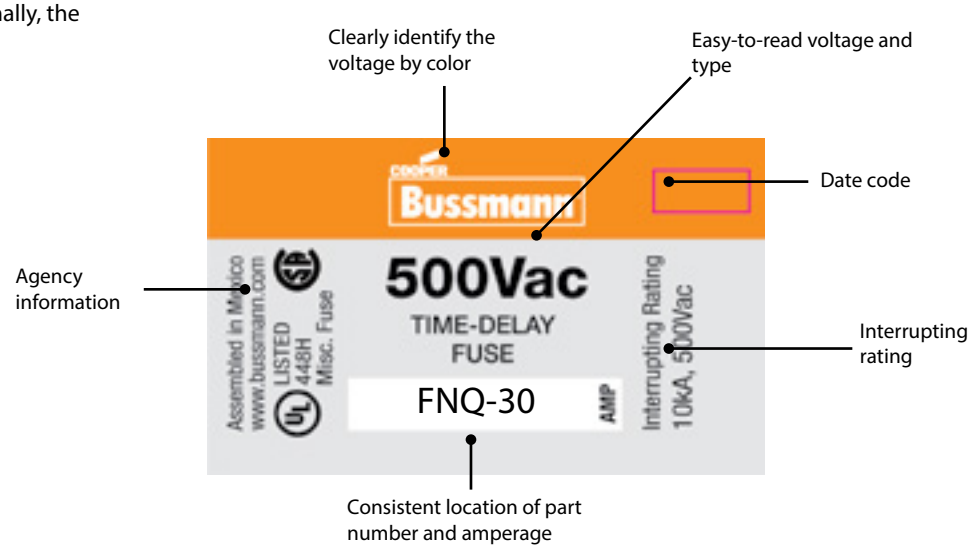
Fuses Made Simple - Control Circuits helps enhance safety

Bussmann's series Fuses Made Simple - Control Circuits helps minimize the risk of misapplication by clearly and consistently indicating both the voltage rating and interrupting rating on the fuse label. The voltage rating is easily identified by both the color code band and the large print on the fuse label. Additionally, the interrupting rating is printed on the side of each fuse.



Consistent look for each label

Every fuse label now has a consistent look. Critical fuse information is presented in an easy-to-read format across the entire Bussmann series control circuit fuse portfolio to help speed replacement.



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