Cooper Bussmann Branch Circuit, Low Voltage Power Distribution Fuses

Classes of Fuses

Safety is the industry mandate. However, proper selection, overall functional performance and reliability of a product are factors which are not within the basic scope of listing agency activities. In order to develop their safety test procedures, listing agencies develop basic performance and physical specifications or standards for a product. In the case of fuses, these standards have culminated in the establishment of distinct classes of low-voltage (600 volts or less) fuses, Classes RK1, RK5, G, L, T, J, H and CC being the more important.

The fact that a particular type of fuse has, for instance, a classification of RK1, does not signify that it has the identical function or performance characteristics as other RK1 fuses. In fact, the Limitron non-time-delay fuse and the Low-Peak dual-element, time-delay fuse are both classified as RK1. Substantial difference in these two RK1 fuses usually require considerable difference in sizing. Dimensional specifications of each class of fuse does serve as a uniform standard.

Class R Fuses

Class R ("R" for rejection) fuses are high performance, ⅒ to 600A units, 250V and 600V, having a high degree of current-limitation and a short-circuit interrupting rating of up to 300,000A (RMS symmetrical). Cooper Bussmann Class R's include Classes RK1 Low-Peak and Limitron fuses, and RK5 Fusetron fuses. They have replaced Cooper Bussmann K1 Low-Peak and Limitron fuses and K5 Fusetron fuses. These fuses are identical, with the exception of a modification in the mounting configuration called a "rejection feature". This feature permits Class R to be mounted in rejection type fuse-clips. "R" type fuseclips prevent older type Class H, ONE-TIME and RENEWABLE fuses from being installed. Since Class H fuses are not current-limiting and are recognized by regulatory agencies as having only a 10,000A interrupting rating, serious damage could result if a Class R fuse were replaced by a Class H fuse. The use of Class R fuse holders is thus an important safeguard. The application of Class R fuses in such equipment as disconnect switches permits the equipment to have a high short-circuit current rating. NEC® 110.9 requires that protective devices have adequate capacity to interrupt short-circuit currents. NEC® 240.60(B) requires fuse holders for current-limiting fuses to reject non-current-limiting type fuses.

In the above illustration, the fuse on the right has a grooved ring in one ferrule, providing the rejection feature of the Class R fuse in contrast to the lower interrupting rating, non-rejection type.

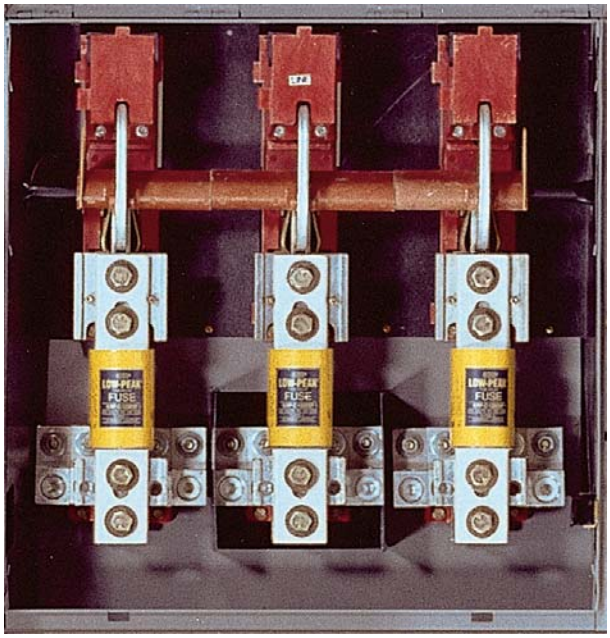
The illustration above shows Class R type fuse rejection clips, which accept only the Class R rejection type fuses.

Branch-Circuit Listed Fuses

Branch-circuit listed fuses are designed to prevent the installation of fuses that cannot provide a comparable level of protection for equipment.

The characteristics of branch-circuit fuses are:

1. They must have a minimum interrupting rating of 10,000A.
2. They must have a minimum voltage rating of 125V.
3. They must be size rejecting such that a fuse of a lower voltage rating cannot be installed in the circuit.
4. They must be size rejecting such that a fuse with a current rating higher than the fuse holder rating cannot be installed.



Cooper Bussmann high performance fuses are used in tens of thousands of industrial plants, commercial buildings, and homes throughout the world.

Cooper Bussmann Branch Circuit, Power Distribution Fuses

Good

Replace

Low-Peak® Fuses* Now Offer Indication That's As Clear As Black And White

Low-Peak current-limiting fuses offer optional permanent replacement fuse indication. The indicator is either black or white; no in between coloring so no second-guessing whether to replace the fuse or not.

Proven Technology

Low-Peak fuses offer the same replacement fuse indication technology that 's proven itself on the Cooper Bussmann CUBEFuse™ fuse and fuse holder system. It's the most reliable technology on the market today.

* Indication available on Cooper Bussmann LPJ_SPI, LPN-RK_SPI (250V) and LPS-RK_SPI (600V).

Low-Peak (Time-Delay)

KRP-C_SP (600Vac), 601 to 6000A, Current-Limiting STD 248-10 Class L

UL Guide #JFHR, UL File #E56412, 300,000AIR ac, 601-2000A (300Vdc 100,000AIR), CSA Class #1422-02, CSA File #53787, 200,000AIR ac

The all-purpose fuse for both overload and short circuit protection of high capacity systems (mains and large feeders). Time-delay (minimum of four seconds at five times amp rating) for close sizing. Unlike fast-acting fuses, time-delay fuses pass harmless surge currents of motors, transformers, etc., without overfusing or any sacrifice of short-circuit current limitation (component protection). The combination use of 1/10 to 600A Low-Peak dual-element time-delay fuses and 601 to 6000A KRP-C Low-Peak fuses is recommended as a total system specification. Easily selectively coordinated for blackout protection. Size of upstream fuse need only be twice that of downstream Low-Peak fuses (2:1 ratio). Low-Peak fuses can reduce bus bracing; protect circuit breakers with low interrupting rating as well as provide excellent overall protection of circuits and loads.

Data Sheet No. 1008, 1009

Low-Peak (Dual-Element, Time-Delay)

LPJ_SP (600Vac), 1 to 600A, Current-Limiting, STD 248-8 Class J

UL Guide #JFHR, UL File #E56412, 300,000AIR ac, 1 to 600A (300Vdc 100,000AIR), CSA Class #1422-02, CSA File #53787, 200,000AIR ac

Space saving LPJ fuses have the advantage of time- delay, permitting them to pass temporary overloads, offering overload, back-up overload, and short circuit protection. Ideal for IEC starter protection.

Data Sheet No. 1006, 1007

Low-Peak (Time-Delay)

LP-CC (600Vac), ½ to 30A Current-Limiting 200,000AIR ac,
STD 248-4 Class CC

UL Guide #JDDZ, UL File #E4273, ½ -2.25A (300Vdc 20,000AIR), 3-15A (150Vdc 20,000AIR), 20-30A (300Vdc 20,000AIR), CSA Class #1422-02, CSA File #53787

The Cooper Bussmann Low-Peak Class CC fuse (LP-CC) was developed specifically for a growing need in the industry - a compact, space saving branch circuit fuse for motor circuits.

Data Sheet No. 1023

Low-Peak (Dual-Element, Time-Delay)

LPS-RK_SP (600Vac), LPN-RK_SP (250Vac), 1/10 to 600A, Current-Limiting, STD 248-12 Class RK1

LPN-RK_SP 0-60A (125Vdc, 50,000AIR), 65-600A (250Vdc, 50,000AIR), LPS-RK_SP 0-600A (300Vdc, 50,000AIR)

UL Guide #JFHR, UL File #E56412, 300,000AIR ac, CSA Class #1422-02, CSA File #53787, 200,000AIR ac

High performance, all-purpose fuses. Provide the very high degree of short circuit limitation of Limitron fuses plus the overload protection of Fusetron fuses in all types of circuits and loads. Can be closely sized to full-load motor currents for reliable motor overload protection, as well as backup protection. Close sizing permits the use of smaller and more economical switches (and fuses); better selective coordination against blackouts; and a greater degree of current-limitation (component protection), Low-Peak fuses are rejection type but also fit non-rejection type fuse holders. Thus, can be used to replace Class H, K1, K5, RK5 or other RK1 fuses.

Data Sheet No. 1001, 1002, 1003, 1004

CUBEFuse™ (Dual-Element, Time-Delay)

TCF (600Vac), 1 to 100A, Current-Limiting, UL Listed Special Purpose Fuse, STD 248-8 Class J Performance

UL Guide # JFHR, UL File # E56412, 300,000AIR ac, (300Vdc – 100,000AIR), CSA Class #1422-02, CSA File #53787, 200,000AIR ac, (300VDC – 100,000AIR)

TCF fuses meet UL Class J Time-Delay electrical performance requirements. It is the world's first finger-safe fuse with the smallest installed footprint of any power class fuse including Class J, CC, T and R fuses. Satisfies requirements of IEC 60529 for IP-20 finger safe rating and provides TYPE 2 "no damage" protection for motor starters when sized properly. The TCF provides open fuse indication and is 35mm DIN rail and panel mountable.

Data Sheet No. 9000

Fusetron® (Dual-Element, Time-Delay)

FRS-R (600Vac), FRN-R (250Vac), 1/10 to 600A, 200,000AIR ac, FRN-R 0-600A (125Vdc, 20,000AIR), FRS-R 0-600A (300Vdc, 20,000AIR), Current-Limiting
STD 248-12 Class RK5

UL Guide #JDDZ, UL File #E4273, CSA Class #1422-02, CSA File #53787

Time-delay affords the same excellent overload protection as Low-Peak fuses of motors and other type loads and circuits having temporary inrush currents such as those caused by transformers and solenoids. (In such circuits, Limitron fuses can only provide short circuit protection). Fusetron fuses are not as fast-acting on short circuits as Low-Peak fuses and therefore cannot give as high a degree of component short circuit protection. Like the Low-Peak fuse, Fusetron fuses permit the use of smaller size and less costly switches. Fusetron fuses fit rejection type fuse holders and can also be installed in holders for Class H fuses. They can physically and electrically replace Class H, K5, and other Class RK5 fuses.

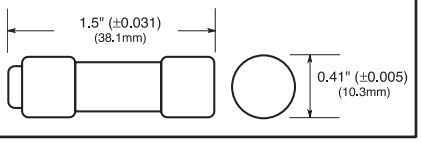
Data Sheet No. 1017, 1018, 1019, 1020

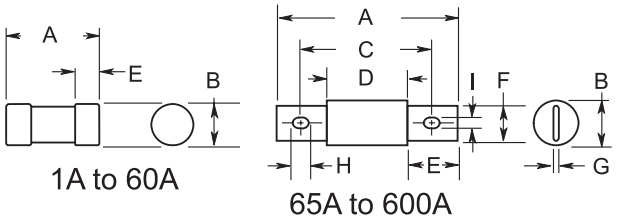
For Data Sheets: www.cooperbussmann.com

Branch Circuit Fuse Dimensions

Class CC - in (mm)

LP-CC, FNQ-R & KTK-R





1A to 60A

65A to 600A

Class J Dimensions - in (mm)

Low-Peak, Limitron and Drive Fuses

LPJ, JKS & DFJ — 600V

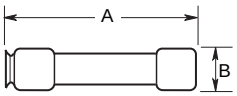
Amp Range	A	B	C	D	E	F	G	H	I
1-30	2.25 (57.2)	0.81 (20.6)	—	—	0.50 (12.7)	—	—	—	—
35-60	2.38 (60.3)	1.06 (27.0)	—	—	0.63 (15.9)	—	—	—	—
65-100	4.63 (117.5)	1.13 (28.6)	3.63 (92.1)	2.63 (66.7)	1.00 (25.4)	0.75 (28.6)	0.13 (3.2)	0.41 (10.4)	0.28 (7.1)
110-200	5.75 (146.1)	1.63 (41.4)	4.38 (111.1)	3.00 (76.2)	1.38 (34.9)	1.13 (28.6)	0.19 (4.8)	0.38 (9.5)	0.28 (7.1)
225-400	7.12 (181.0)	2.11 (53.6)	5.25 (133.3)	1.51 (38.3)	1.87 (47.6)	1.62 (41.2)	0.25 (6.4)	0.56 (14.2)	0.40 (10.3)
450-600	8.00 (203.2)	2.60 (66.0)	6.00 (152.4)	1.52 (38.6)	2.12 (54.0)	2.00 (50.8)	0.53 (13.5)	0.72 (18.3)	0.53 (13.5)

CLASS RK1 & RK5 - in (mm)

Basic dimensions are same as Class H (formerly NEC) One-Time (NON & NOS) and Superlag Renewable RES & REN fuses. NOTE: These fuses can be used to replace existing Class H, RK1 and RK5 fuses relating to dimensional compatibility.

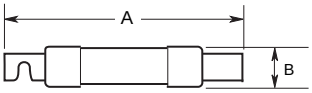
Ferrule Styles

Amp	250V		600V	
Range	A	B	A	B
1/10-30	2 (50.8)	0.56 (14.3)	5.0 (127.0)	0.81 (20.6)
35-60	3 (76.2)	0.81 (20.6)	5.5 (139.7)	1.06 (27.0)



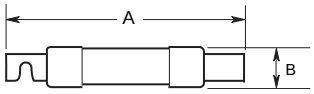
Fusetron — (FRN-R & FRS-R) & Limitron — (KTN-R & KTS-R)

Amp	250V		600V	
Range	A	B	A	B
70-100	5.88 (149.2)	1.06 (26.9)	7.88 (200.0)	1.34 (34.0)
110-200	7.13 (181.0)	1.56 (39.6)	9.63 (244.5)	1.84 (46.7)
225-400	8.63 (219.1)	2.06 (52.3)	11.63 (295.3)	2.59 (65.8)
450-600	10.38 (263.5)	2.59 (65.8)	13.38 (339.7)	3.13 (79.5)



Low-Peak — (LPN-RK & LPS-RK)

Amp	250V		600V	
Range	A	B	A	B
70-100	5.88 (149.2)	1.16 (29.5)	7.88 (200.0)	1.16 (29.5)
110-200	7.13 (181.0)	1.66 (42.2)	9.63 (244.5)	1.66 (42.2)
225-400	8.63 (219.1)	2.38 (60.5)	11.63 (295.3)	2.38 (60.5)
450-600	10.38 (263.5)	2.88 (73.2)	13.38 (339.7)	2.88 (73.2)



Class T - in (mm)

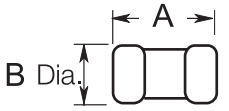
T-Tron Fuses

JJN — 300V

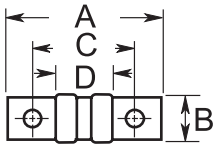
Amp Range	A	B	C	D
1-30	0.88 (22.2)	0.41 (10.3)	—	—
35-60	0.88 (22.2)	0.56 (14.3)	—	—
70-100	2.16 (54.8)	0.75 (19.1)	1.56 (39.7)	0.84 (21.4)
110-200	2.44 (61.9)	0.88 (22.2)	1.69 (42.9)	0.84(21.4)
225-400	2.75 (69.9)	1.00 (25.4)	1.84 (46.8)	0.86 (21.8)
450-600	3.06 (77.8)	1.25 (31.8)	2.03 (51.6)	0.88 (22.2)
601-800	3.38 (85.7)	1.75 (44.5)	2.22 (56.4)	0.89 (22.6)
801-1200	4.00 (101.6)	2.00 (50.8)	2.53 (64.3)	1.08 (27.4)

JJS — 600V

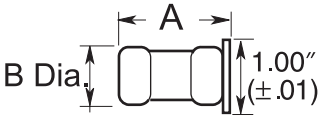
Amp Range	A	B	C	D
1-30	1.50 (14.3)	0.56 (38.1)	—	—
35-60	1.56 (20.6)	0.81 (39.7)	—	—
70-100	2.95 (19.1)	0.75 (75.0)	2..36 (59.9)	1.64 (41.7)
110-200	3.25 (22.2)	0.88 (82.6)	2.50 (63.5)	1.66 (42.1)
225-400	3.63 (25.4)	1.00 (92.1)	2.72 (69.1)	1.73 (44.1)
450-600	3.98 (31.8)	1.25 (101.2)	2.96 (75.0)	1.78 (45.2)
601-800	4.33 (44.5)	1.75 (109.9)	3.17 (80.6)	1.88 (47.6)



JJN 1A to 60A
JJS 1A to 30A



JJN 70A to 1200A
JJS 70A to 800A



JJS 35A to 60A