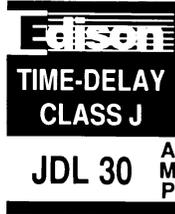




Fuse Sizing, Derating and Interrupting Rating (IR)

Fuse Ratings



Fuses with an A-C voltage rating may be applied at system voltages below the fuse voltage rating, but not at voltages above the fuse voltage rating. The other A-C fuse ratings remain the same at applied voltages below the fuse voltage rating.

A-C rated fuses should not be applied in D-C voltage circuits unless D-C application ratings are provided by the fuse manufacturer. Except for some special purpose fuses, D-C ratings are not usually shown on fuse labels.

EDISON Time/Current Curves, Peak Let-Through Curves are based on 60 Hertz A-C data.

The operating frequency (Hertz) will affect fuse characteristics in various ways.

Time/Current Curves will not shift and fuse ratings will not change from 1-100 Hertz in normal applications. If ferrous hardware is used to mount the fuses, eddy current heating could alter the ratings.

Above 100 Hertz, "skin effect" could alter the fuses' rating characteristics. This effect must be analyzed on an individual application basis.

Other characteristics shown on fuse labels such as "interrupting rating", "current limiting", "time-delay", "fast-acting" and Underwriters Laboratories, Inc. (UL) Class are described elsewhere.

Fuse labels show "certification" or "listing" logo's when applicable. Such logo's may be:

- "UL" (UL "Listed")
- "CSA" (Canadian Standards Association "certified")
-  (UL Recognized)

Such logos mean that the fuse meets the performance standards of these safety organizations.

Some EDISON fuses, such as rectifier protection fuses, special purpose fuses, etc., do not show safety organization logos because test standards do not exist, or logo's are awaiting testing for newly established standards. In these cases, any necessary additional information may be obtained from the manufacturer.

Ambient fuse de-rating...

Fuses designed to U.S.A. standards are tested for proper ampere ratings at 25 degrees Centigrade. Since fuses operate by heat melting fuse elements, the ampere ratings can change for higher or lower ambient temperature (temperature of air around an enclosure in which fuses are installed). The following information is provided to choose fuses with different ampere ratings for unusually high or low ambient temperatures.

Correction Factors for Edison Dual-Element ECNR/ ECSR and LENRK/LESRK Fuses⁽¹⁾ (See next column)

Ambient Temperatures		Carrying Capacity of Fuse in % of Rating	% of Opening Time
°C	°F		
-60	-76	120	135
-40	-40	117	130
-20	- 4	113	125
0	32	108	120
20	68*	103*	105
25	77*	100*	100
30	86*	98*	95
40	104*	95*	85
60	140	85	70
80	176	75	50
100	212	60	35

*No correction needed with this range.

Correction Factors for Edison Fast-Acting and Non-Delay Fuses⁽¹⁾

Ambient Celsius Temperatures	Maximum Load Current (% of Rating)
-20 to -40	93%
-19 to -1	90%
zero to 24	86%
25 to 60	80%
61 to 80	60%
81 to 100	45%

⁽¹⁾Fuses installed in an enclosure with a base loading of 80% as required by the National Electrical Code. Contact Edison Fuses Inc. for other conditions.

Interrupting Rating (I.R.)

N.E.C. 110.9 requires that the interrupting rating of fuses and breakers not be less than the maximum available short circuit current at their point-of-application as indicated by Figure 2. Circuits where fuses and breakers are installed may be capable of thousands of amperes of short circuit current flow during a short circuit condition. When fuses or breakers are installed where the value of short circuit current flow may exceed the interrupting rating of the devices, a very serious safety hazard may exist. A flow of short circuit current in excess of the device interrupting rating may cause only a mild device rupture during device opening or a violent explosion depending on the value of excess short circuit current flow.

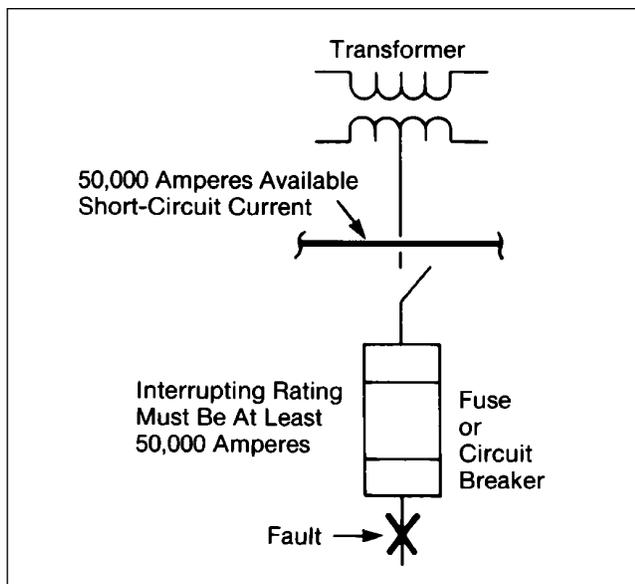


Figure 2