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Low Voltage Cartridge Fuses

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FOREWORD

The purpose of this technical publication is to assist in the proper selection and application of the different classes of Low Voltage Cartridge Fuses.

User needs have been considered throughout the development of this publication. Proposed or recommended revisions should be submitted to:

Technical Director, Operations
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NEMA BI 50009-2024 revises and supersedes NEMA FU-1-2012.

This technical publication was developed by the NEMA Fuse Section of the National Electrical Manufacturers Association. Section approval of the standard does not necessarily imply that all section members voted for its approval or participated in its development. At the time it was approved, the Fuse Section was composed of the following members:

Eaton	Cleveland, OH
Littelfuse, Inc.	Chicago, IL
Mersen USA, LLC	Newburyport-, MA
Phoenix Contact	Middletown, PA

Section 1
GENERAL

1.1 Scope

This Standard covers the following fuses:

a. Class G, H, J, K, L, R, T, CC, C, CA, and CB low voltage cartridge fuses rated 600 V or less, alternating current and direct current

b. Fuses for photovoltaic systems rated 1500 V or less direct current

Section 2
DEFINITIONS

2.1 Definitions

ambient temperature: The temperature of the air surrounding the fuse.

arcing time: The time from the instant the fuse element or link has melted and arcing is initiated until final circuit interruption by the fuse.

body: The part of the fuse that encloses the fuse elements and supports the contacts. Also referred to as cartridge, tube, or case.

cartridge fuse: A fuse consisting of a current responsive element inside a fuse body with contacts on both ends.

cartridge or body size: The set of dimensions of fuses within a fuse class or system. Each individual size covers a given range of rated currents for which the specified dimensions of the fuse remain unchanged.

clearing I^2t (ampere squared seconds): The measure of heat energy developed during current interruption from the initiation of an overcurrent until the fuse clears the circuit. "I^2" stands for the square of the effective (rms) let-through current and "t" stands for the time of current flow in seconds. The term I^2t also applies during the melting or arcing portions of the clearing time and is referred to as melting or arcing I^2t, respectively. Clearing I^2t is the sum of melting I^2t and arcing I^2t.

contacts: The external metallic parts of the fuse used to complete the circuit. Also referred to as ferrules, caps, blades, or terminals.

current-limiting fuse: A fuse that, within a specified overcurrent range, limits the clearing time at rated voltage to an interval equal to or less than the first major of symmetrical current loop duration and limits peak let-through current to a value less than the available peak fault current.

current-limiting range: The range of prospective currents from the threshold current to the interrupting current rating of a fuse.

current rating (I_n): The nominal rms AC or DC ampere rating, based on specified conditions, which is assigned to a fuse.

element: The fusible portion of the fuse that melts during an overcurrent condition to clear the circuit. Also referred to as a link.

filler: A material used to fill a section or sections of a fuse.

fuse: A protective device that opens a circuit during specified overcurrent conditions by means of a current responsive element.

interrupting rating: The highest prospective rms symmetrical alternating current or direct current that the fuse is required to interrupt under specified conditions verified by operation at rated voltage.

maximum energy: A test condition that causes a fuse to experience maximum energy during interruption within the first half-cycle.

melting time: The time from the initiation of an overcurrent to the instant arcing of the element begins.

overcurrent: Any current in excess of the fuse current rating.